HEALTH OUTCOMES: AN INTERNATIONAL COMPARISON

HEARING

BEFORE THE

SUBCOMMITTEE ON HEALTH

OF THE

COMMITTEE ON WAYS AND MEANS
HOUSE OF REPRESENTATIVES

ONE HUNDRED THIRD CONGRESS

SECOND SESSION

APRIL 14, 1994

Serial 103–84

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HEALTH OUTCOMES: AN INTERNATIONAL COMPARISON

THURSDAY, APRIL 14, 1994

HOUSE OF REPRESENTATIVES,
COMMITTEE ON WAYS AND MEANS,
SUBCOMMITTEE ON HEALTH,
Washington, D.C.

The subcommittee met, pursuant to notice, at 10:05 a.m., in room 1100, Longworth House Office Building, Hon. Jim McDermott, presiding.

[The press release announcing the hearing follows:]

FOR IMMEDIATE RELEASE
THURSDAY, APRIL 7, 1994

PRESS RELEASE #28
SUBCOMMITTEE ON HEALTH
COMMITTEE ON WAYS AND MEANS
U.S. HOUSE OF REPRESENTATIVES
1102 LONGWORTH HOUSE OFFICE BLDG.
WASHINGTON, D.C. 20515
TELEPHONE: (202) 225-7785

**THE HONORABLE PETE STARK (D., CALIF.), CHAIRMAN
SUBCOMMITTEE ON HEALTH,
COMMITTEE ON WAYS AND MEANS, U.S. HOUSE OF REPRESENTATIVES,
ANNOUNCES A HEARING ON
HEALTH OUTCOMES: AN INTERNATIONAL COMPARISON**

The Honorable Pete Stark (D., Calif.), Chairman, Subcommittee on Health, Committee on Ways and Means, U.S. House of Representatives, announced today that the Subcommittee will hold a hearing entitled Health Outcomes: An International Comparison. The hearing will be held on Thursday, April 14, 1994, beginning at 10:00 a.m., in the main Committee hearing room, 1100 Longworth House Office Building.

In announcing the hearing, Chairman Stark said: "As we move closer to reforming our health care system, it is critical that we broaden our focus from issues of access and costs, to clinical outcomes. The General Accounting Office (GAO) has conducted two studies which demonstrate that prudent management can have a positive impact on clinical care."

In response to a request from Chairman Stark, the GAO will present the findings from these studies. Any individual or organization may submit a written statement for consideration by the Subcommittee and for inclusion in the printed record of the hearing.

BACKGROUND:

The GAO has recently published two reports examining the differences in the availability of health services and outcomes across developed countries. The first study, "Cancer Survival: An International Comparison of Outcomes," reports on the survival rates of large samples of patients from the U.S. and Ontario, Canada, diagnosed with lung cancer, colon cancer, Hodgkin's disease, and breast cancer. The study found that the U.S. and Ontario share similar patterns of survival for these conditions.

In the second study, "Bone Marrow Transplantation: International Comparisons of Availability and Appropriateness of Use," ten countries were evaluated. The U.S. placed in the middle of these countries both on the availability and the appropriateness of transplantation. The U.S. had relatively more patients receiving transplants at less favorable stages of disease than in most countries. For instance, in the case of chronic myeloid leukemia, five other countries were ahead of the U.S. in providing transplants in the early, most favorable stage. The GAO found evidence that, relative to other countries, some U.S. patients, for whom the treatment offers few likely benefits, received transplants, while others, who could benefit more, did not.

DETAILS FOR SUBMISSION OF WRITTEN COMMENTS:

For those who wish to file a written statement for the printed record of the hearing, six (6) copies are required and must be submitted by the close of business on Thursday, April 28, 1994, to Janice Mays, Chief Counsel and Staff Director, Committee on Ways and Means, U.S. House of Representatives, 1102 Longworth House Office Building, Washington, D.C. 20515. An additional supply of statements may be furnished for distribution to the press and public if supplied to the Subcommittee office, 1114 Longworth House Office Building, before the hearing begins.

FORMATTING REQUIREMENTS:

Each statement presented for printing to the Committee by a witness, any written statement or exhibit submitted for the printed record, or any written comments in response to a request for written comments must conform to the guidelines listed below. Any statement or exhibit not in compliance with these guidelines will not be printed, but will be maintained in the Committee files for review and use by the Committee.

1. All statements and any accompanying exhibits for printing must be typed in single space on legal-size paper and may not exceed a total of 10 pages.

2. Copies of whole documents submitted as exhibit material will not be accepted for printing Instead, exhibit material should be referenced and quoted or paraphrased. All exhibit material not meeting these specifications will be maintained in the Committee files for review and use by the Committee.

3 Statements must contain the name and capacity in which the witness will appear or, for written comments, the name and capacity of the person submitting the statement, as well as any clients or persons, or any organization for whom the witness appears or for whom the statement is submitted.

4. A supplemental sheet must accompany each statement listing the name, full address, a telephone number where the witness or the designated representative may be reached and a topical outline or summary of the comments and recommendations in the full statement This supplemental sheet will not be included in the printed record.

The above restrictions and limitations apply only to material being submitted for printing Statements and exhibits or supplementary material submitted solely for distribution to the Members, the press and public during the course of a public hearing, may be submitted in other forms

* * * * *

Mr. McDERMOTT [presiding]. Good morning. The committee will come to order.

Chairman Stark is involved in another issue and will be along, I think, as the meeting progresses.

Today we will be hearing from the General Accounting Office about two recently issued reports. These studies are intriguing because they provide a useful reminder that sometimes we can all come to believe that something must be true because we have heard it repeated many times, and it may not be accurate at all. Most of us accepted the notion that the U.S. health care system was the best in the world in offering high-tech medicine to most, if not all, of our citizens. My colleagues who have been especially reluctant to consider substantial change in our health care system have often cited this notion as a "fact" and, therefore, is a major reason for being cautious.

The GAO has issued two studies that show that this "fact" may not, in fact, be true. The first study shows that the outcomes of care for four different types of cancer are essentially identical in the United States and Canada. The second demonstrates that bone marrow transplantation—an example of a complex and expensive technology that provides the potential to cure otherwise fatal diseases—is more widely available in other health care systems than it is in our very own. Moreover, it turns out that Americans appear less likely to receive a transplant when it will do them the most good.

In other words, we spend between 50 and 100 percent more on health care than other advanced nations and, at least in these instances, have little to show for it. This is the ultimate example of fraud, waste, and abuse in our society. It will be a national shame if we cannot do better.

GAO is to be commended for bringing information to bear where rhetoric has heretofore posed as evidence. These studies provide a wealth of extensive documented and carefully interpreted data that directly relate to the question of what we have to lose and gain from health care reform in terms of the quality of care actually provided to our citizens.

Of course, these two studies do not tell the whole story. We still have much to learn in order to fully understand comparisons of survival rates across health care systems. And it would be useful to collect comparable data from high-tech procedures other than bone marrow transplantation. But these studies have made an impressive start. In the future, those who want to argue that the existing health care system in this country is "too good to change," they will now be back on the hook to provide some basis for that basic assertion. I think this should be a very interesting hearing.

Mr. Thomas.

Mr. THOMAS. Thank you, Mr. Chairman.

I think furthermore it is interesting to note, after the opening comments, that the studies were requested by a former ranking member of this subcommittee, Mr. Gradison of Ohio, back in 1991, which clearly indicates that this side of the aisle, at least, wanted to make sure that when we went forward, we went forward on a factual basis. And as we have discovered in recent months, utilizing both the quality resources of the GAO and of the Congressional

Budget Office, it is extremely difficult to get enough information to be able to make definitive statements about anything. And the more we go forward, the more difficult it is in terms of getting as much information as we would like. Because I think it is important to get a thorough understanding of how well we now provide high-tech, high-cost care, since obviously we are considering and this subcommittee has just endorsed, major systemic reforms that could substantially limit the availability of sophisticated medical care in the future.

I am interested in today's hearing because I think the evidence that will be presented represents, at most, a curious first step in looking at these issues rather than presenting any well-grounded conclusions. I hope we will refrain from making broad conclusions based on these studies because the studies are most notable in that they provide no solid conclusions and tend to raise, as has been the case recently, more questions than they answer.

Moreover, I am concerned about some of the conclusions suggested in the reports, in particular that bone marrow transplants are judged as more "available" in a country simply because more transplants are conducted. As I understand it, an informed bone marrow transplantation is a very risky procedure, and many factors must be considered before judgment can be made that a transplant is appropriate, including the patient's willingness to undergo what I understand is a fairly traumatic procedure. Often a transplant may not be recommended even though it is otherwise available.

It seems to me that many factors that could be influencing these comparisons were not considered or accounted for in the studies, and clearly we need to continue getting this kind of information.

In addition, I think there are important questions that were not examined at all. You can never have all that you want in any particular study, but one of the chief concerns with health care reform legislation is how increased regulation of health care will affect our Nation's ability to develop and take advantage of medical and technological breakthroughs. These studies do not speak at all to how quickly the United States generates and adopts innovative diagnostic procedures and treatments compared to other countries.

The breast cancer study seems to indicate that the self-breast examination and the use of mammography may be allowing American women to live longer than their Canadian counterparts. The interaction between education, and knowledge, and the medical procedures is one that we need to continue to pursue as we are looking at potential preventive portions of any kind of a basic package, and the fact of course, that we are not allowed to score any savings whatsoever on any of the preventive portions.

These are questions that are important as we attempt to restructure America's health care system. Unfortunately, all the important questions remain unanswered. These shed a little light, but, frankly, I hope we can get a whole lot more as we move forward with some fundamental decisions that are going to have to be made.

Thank you, Mr. Chairman.

Mr. MCDERMOTT. Mrs. Johnson.

Mrs. JOHNSON. Thank you, Mr. Chairman.

I look forward to his hearing. Knowledge is power, and power will help us, such knowledge will help us to make good decisions in the future. And I welcome these studies, though I concur with my colleague, Mr. Thomas from California, on understanding clearly on the record the limitations as well as the insights that they give us.

But I also would like to say at this time that yesterday a very important report was made public that revealed that, in spite of Congress' efforts and the administration's efforts to both raise additional revenue and reduce projected expenditures under Medicare, the program is actually predicted now to go broke by the year 2001. I think this is a report that the subcommittee needs to hold hearings on. I think we need to understand how the current problems of Medicare are or are not going to be addressed by the national reform proposals. And, in fact, our immediate responsibility, it seems to me, is to look at the cost drivers in Medicare and what could be done to control that program and to make good on the promises it makes to our seniors in the decades ahead.

So I would hope that this subcommittee would hold hearings on the report of the overseers of Medicare because their projections are of enormous concern to all of us. And our conclusions as to what must be done in Medicare at this time will have an impact on what we think can be done to address the Nation's problems in the health care sector.

Thank you, Mr. Chairman.

Mr. MCDERMOTT. Thank you.

Today we have Eleanor Chelimsky, Assistant Comptroller General for the Program Evaluation and Methodology, and George Silverman, who is the Assistant Director for Program Evaluation and Methodology. We welcome you to the committee.

STATEMENT OF ELEANOR CHELIMSKY, ASSISTANT COMPTROLLER GENERAL, PROGRAM EVALUATION AND METHODOLOGY DIVISION, U.S. GENERAL ACCOUNTING OFFICE; ACCOMPANIED BY GEORGE SILBERMAN, ASSISTANT DIRECTOR, PROGRAM EVALUATION AND METHODOLOGY DIVISION

Ms. CHELIMSKY. Good morning, Mr. Chairman, members of the subcommittee. It is a pleasure to be here with you this morning.

I would like to begin by introducing George Silberman, whom you already know, and some of the people who have worked on our study. We have with us Eric Peterson, Marcia Crosse, and Richard Weston. Unfortunately, one of the team, Don Keller, was not able to come here this morning because he is testifying elsewhere on the quality of geriatric assessments. So we are missing one member, but we hope to be able to work without him.

Our work on health care quality goes back about 10 years to some early studies we did looking at the outcomes of Medicare patients when the Prospective Payment System was introduced, which we all remember, and to work comparing the survival outcomes of patients in clinical trials to those of patients in medical practice.

In the two studies I report on today, we set out to learn how the United States compares empirically with other medically advanced

countries on three measures of health care quality: survival outcomes, the availability of a particular treatment, and the appropriateness of that treatment's use. These studies were not intended to speak to American health care in general. They were intended instead to illuminate the aspects of quality I just mentioned—that is, outcomes, access, and appropriateness—but targeted on a specific disease and on a specific high-tech, high-cost therapy. We chose to focus in these studies on cancer and on one of its treatments, allogeneic bone marrow transplantation.

We asked three questions across the two studies. On outcomes, we wanted to know how well U.S. patients are doing relative to Canadian patients with respect to cancer survival. On access or availability, we asked whether U.S. patients who need bone marrow transplants are more or less likely to get them than patients in other countries. And on appropriateness, the question was whether the U.S. patients who received transplants are more or less likely than patients in other countries to get them at the best time.

So, as I have said, our aims were not grandiloquent in the two studies, but the effort was, nonetheless, considerable, and our samples are sizable.

With a cancer survival study in which we followed United States and Canadian patients for 9 years or more, the sample included 252,000 U.S. patients and 92,000 from Ontario, Canada. For the bone marrow transplantation work, we had not a sample but a census; that is, we were able to obtain data on every single transplant performed, about 10,000 in all, over a 3-year period at 208 transplant centers. These centers were in the United States, Australia, Canada, Denmark, France, Germany, the Netherlands, New Zealand, Sweden, and the United Kingdom.

Now let me turn to the results of the first study, which examined outcomes for four types of cancer: breast cancer, cancer of the colon, lung cancer, and Hodgkin's disease. I have three findings to report.

First, the results with regard to Canadian versus United States survival seemed to be pretty much of a wash, except for breast cancer. If you look at figure 1 on page 4 of my statement or you look at the chart that is over there, whichever one is easier for you to see, it shows the percentage of patients with each form of cancer in each of the two countries who remain alive at any specific time following diagnosis. It seems clear from the way the curves are almost superimposed on each other that people in Ontario and people in the United States share quite similar patterns of survival.

Second, with regard to breast cancer, we found that U.S. patients had about a 5 percent better chance of living 10 years after diagnosis than did patients in Canada. Now, that translates into about 45,000 more U.S. patients alive after 10 years than there would have been if the United States had experienced Ontario's rate of survival.

The third finding concerns lung cancer where the trend went in the opposite direction. Here, Ontario's patients had about a 1.7 percent better chance of living 10 years after diagnosis than did U.S. patients. That corresponds to almost 17,000 more Canadian patients alive 10 years later than there would have been if they had experienced the U.S. rate of survival.

In sum, with respect to outcomes, we found that cancer survival patterns are similar overall for United States and Canadian patients, although there are some noteworthy differences in breast and lung cancer that we cannot interpret based on our data but which need to be carefully examined.

Our second study analyzed the availability and appropriateness of bone marrow transplantation across 10 countries. Here I have two findings to report.

First, we found, to our great surprise, that the United States did not lead the 10-country group in terms of the availability of bone marrow transplants to American patients needing them. Table 1 on page 11 of my statement shows that for chronic myeloid leukemia, or CML, where transplant is critical because it is the only potentially lifesaving therapy, about 1 in three patients who needed transplants received them in the United States versus about 1 in 2 transplanted in Sweden or in the United Kingdom. Overall, you can see from the data in the table that patients in the United States were less likely than patients of six other nations to get transplants if they needed them.

The second finding I want to report deals with appropriateness. In general, patients should be transplanted earlier rather than later in the course of their disease. Table 2 on page 13 shows that four health care systems have been transplanting the fewest patients inappropriately; that is, at an advanced stage of disease. Patients in the Netherlands, the United Kingdom, Canada, and France thus have the greatest likelihood of being transplanted at a point that both optimizes their benefits and minimizes their very real risks.

As for U.S. patients, they were among the least likely to receive their transplants at the most favorable point in the progression of their disease. So with regard to appropriateness, we found that patients in seven countries received higher quality care than did patients in the United States.

What can we conclude from these findings? Well, I think there are five points we need to make. First, our data show that for bone marrow transplants, many other countries rank higher than we do, either in providing access to the treatment or in ensuring that the treatment occurs at the best possible time. Americans more often than others have failed to receive this treatment when it would have done the most good.

Second, although a lot of the current health debate revolves around issues of how much or how many, another conclusion arising from our data is that neither large nor small quantity seems to rule out quality. France did many transplants and ranked high on appropriateness. The Netherlands did few transplants and ranked highest of all on appropriateness.

Third, our data make clear that, for the diseases and therapy examined, a range of alternative approaches to financing and delivering health care can perform as well or better along three dimensions of quality than our existing health care system.

Fourth, our data raise a challenge to the prevailing assumption that the United States relies more heavily than other countries on high-tech, costly interventions. At least for bone marrow transplants, many other countries do more.

Finally, both our studies show the danger of making general assumptions about health care quality without strong empirical support for those assumptions.

Thomas Huxley once said that the great tragedy of science is the slaying of a beautiful hypothesis by an ugly fact. Now, I do not expect two studies to slay this particular hypothesis, but I do hope they can lead to more empirical investigations of quality and some efforts by physicians and insurance companies to revisit the time of transplant for CML patients. My understanding is that, in fact, this is already underway.

Thank you, Mr. Chairman. That concludes my remarks. I will be happy to answer any questions that you or the committee may have.

[The prepared statement follows:]

TESTIMONY OF ELEANOR CHELIMSKY
ASSISTANT COMPTROLLER GENERAL
PROGRAM EVALUATION AND METHODOLOGY DIVISION
UNITED STATES GENERAL ACCOUNTING OFFICE

Mr. Chairman and Members of the Subcommittee:

It is a pleasure to be here this morning to present our ongoing work on the quality of health care. Today I want to talk about the findings of two studies, each of which examines health care quality from an international, comparative perspective. The first compares survival for cancer patients in the United States and Ontario, while the second examines patterns across 10 countries in the use of allogeneic bone marrow transplantation in the treatment of leukemia.[1] Both studies focus on dimensions commonly associated with the quality of a health care system. The survival study compares outcomes for cancer patients, while the bone marrow study measures the availability and appropriateness of allogeneic bone marrow transplants. Let me first address the findings and implications for each study and then present our overall conclusions.

Outcomes: Cancer Survival in the U.S. and Ontario

Quality in health care has many components, but arguably the most important are the outcomes of medical interventions. International comparisons of health care outcomes have been sparse, with the most frequently cited data focused on infant mortality and average life expectancy. Although such comparisons are interesting and informative, the measures themselves can be influenced by many factors and, therefore, are not very direct indicators of the quality of health care. That is, they are determined not only by the health care delivery system but also by myriad social, environmental, and other factors, including population genetics, fertility patterns, and the prevalence of violence, to name but a few. That is why one of our studies focused on an outcome more directly dependent on the health care system--cancer patient survival. The question we set out to answer was whether there was any difference between the survival patterns for cancer patients in the United States and Canada.

We addressed this question by examining survival for four types of cancer: Hodgkin's disease, and breast, colon, and lung cancer. We selected these diseases so that we could include one cancer in which very few patients survive for more than a few years after diagnosis (lung cancer), one in which about half of the patients have the possibility of long-term survival (colon cancer), and a cancer in which most patients can be cured (Hodgkin's disease). Breast cancer was added to the group of diseases because it is a condition that is both prevalent (in the United States, approximately 182,000 women were diagnosed with the disease in 1993) and of major public concern.

We compared the survival rates of large samples of patients from the United States and Canada. The U.S. patients were drawn from the data base maintained by the National Cancer Institute's Surveillance, Epidemiology, and End Results program. These data cover approximately 10 percent of the U.S. population and are drawn from a diverse set of geographic areas. Data on Canadian patients were provided by the Ontario Cancer Registry. Ontario accounts for approximately a third of Canada's population. However, because our report does not contain data on cancer patients from other provinces, the patterns we found are best characterized as those of Ontario rather than of the entire country.

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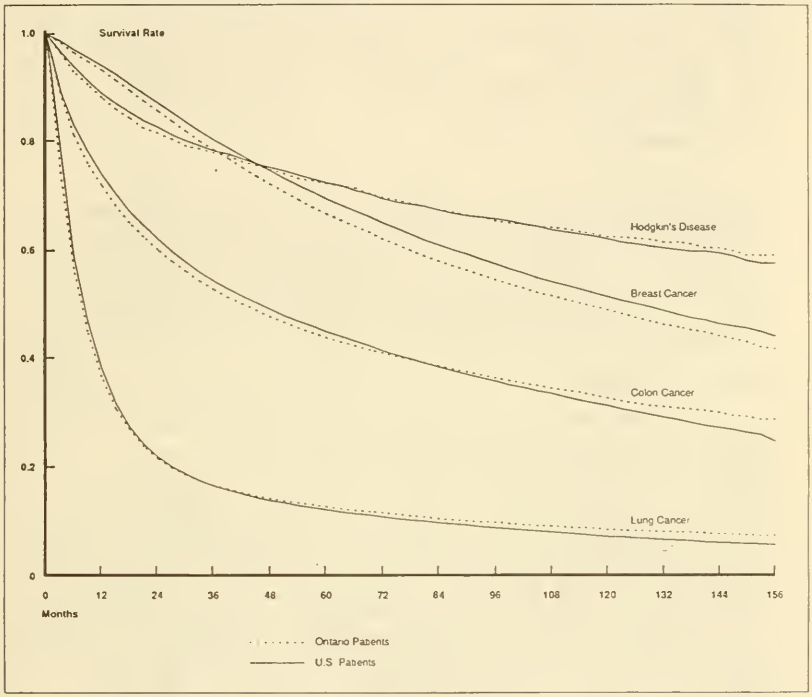
[1]See U.S. General Accounting Office, Cancer Survival: An International Comparisons of Outcomes, GAO/PEMD-94-5 (Washington, D.C.: March 1994), and U.S. General Accounting Office, Bone Marrow Transplantation: International Comparisons of Availability and Appropriateness of Use, GAO/PEMD-94-10 (Washington, D.C.: March 1994).

Study Results

Our data included all patients diagnosed with any of the four types of cancer between 1978 and 1986. For each patient, we determined whether he or she was still alive at the end of 1990 (the last year for which data on patient follow-up were available) and, if not, the date of death. By cumulating across all the patients with each cancer, we generated a number of measures and statistics. Perhaps the most informative of these are the survival curves displayed in figure 1.

Figure 1: Cancer Survival in the United States and Ontario



What these curves show is the percentage of patients with each form of cancer in each country who remain alive at any specific time following diagnosis. For example, if we look at the colon cancer curve at 5 years, a slightly higher percentage of U.S. patients (1.2%) remain alive, whereas by 9 years a slightly greater percentage of the patients from Ontario remain alive (1.1%).

Even a cursory examination of the figure makes it clear that patients in the United States and Ontario share strikingly similar patterns of survival for the different types of cancer. That is, the two curves for each cancer are almost superimposed on each other. In addition, there was not much difference in the survival rates (the distance between the two curves at any single point) for any of the cancers. Thus, the answer to our question of what difference exists in survival between the United States and Ontario is, "not very much." Importantly, for each of the four cancers, this overall similarity in survival remained even after differences in patients' age, sex, and year of diagnosis were taken into account.

However, in addition to the similarity, there were some distinctions. First, a difference was observed between the patterns for breast cancer and the patterns for the three other diseases. As the figure shows, breast cancer patients in the United States experienced a slightly but consistently higher level of survival than Ontario's breast cancer patients throughout the follow-up period. In contrast, U.S. patients with each of the three other diseases demonstrated initially higher survival rates than their counterparts from Ontario (up to 1 or more years after diagnosis) followed by a loss of advantage occurring somewhere between 1 and 6 years. The result was that by 9 or 10 years, U.S. survival rates were slightly lower than the corresponding Ontario rates.

The differences in percentage of patients surviving were small for each cancer, but many were statistically significant, and the number of patients represented by these differences were sometimes substantial. For example, the 1.7 percent difference in lung cancer survival at 10 years after diagnosis corresponds to almost 17,000 additional U.S. patients who would have been alive 10 years after diagnosis if Ontario's survival (and general mortality) experience had applied in this country. Similarly, the 4.8 percent difference in breast cancer survival translates into about 45,000 more U.S. patients alive after 10 years than if we had experienced Ontario's survival rate.[2]

Study Implications

It is not clear how to interpret the differences between the United States and Ontario, even those that show up as statistically significant (those for lung and breast cancers). One possible explanation is that quality of care for breast cancer patients is better in the United States than in Ontario and that for the three other cancers it is roughly equivalent or slightly better in Ontario. However, the differences might also result largely from variation in the way these cancers are detected in each country. Detection can influence survival in a number of ways. The earlier most cancers are detected, the more effectively they can be treated, thus improving survival. But earlier detection can also improve the measured survival time of a patient without improving actual survival. This phenomenon occurs because the earlier detection increases the observed survival time even when the date of death remains unchanged. In addition, aggressive detection practices can skew survival rate comparisons by increasing the percentage of patients with very slow growing tumors. In systems with more passive screening policies, these patients (who have a better-than-average prognosis) might never be incorporated into the survival data because their cancers were never detected. Until the effect on survival of possible variations in detection practices can be determined, the implications of any differences in measured

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[2]Both the 1.7 percent difference for lung cancer and the 4.8 percent difference for breast cancer are differences in relative survival. This measure controls for variation in overall life expectancy between the two countries.

survival for quality of care in the two locations will remain unclear.

Availability and Appropriateness: Bone Marrow Transplantation in Ten Countries

Because outcomes alone are not sufficient to assess quality, we undertook another study that was concerned primarily with comparisons between the United States and 9 other countries on two other important dimensions of quality in health care: availability and appropriateness. As I mentioned, this study focused on allogeneic bone marrow transplantation, a complex and expensive procedure used to treat leukemia and other hematologic disorders.[3] Our interest was in determining the extent to which patients in each country who needed transplants received them and how often transplants were performed at a point that optimized benefits while minimizing risks.

Allogeneic bone marrow transplants are recognized as a standard treatment option for patients with many different diseases but are most often used in the treatment of three types of leukemia: chronic myeloid leukemia (CML), acute lymphoid leukemia (ALL), and acute myeloid leukemia (AML). Our focus was on these three diseases. Although a transplant sometimes offers the only chance of cure for patients with these diseases, it can also lead to serious complications and sometimes to death. Therefore, its use requires a careful weighing of the potential benefit and harm to the patient.

In order to compare the availability and appropriateness of this treatment across health systems, we obtained both incidence data for leukemia and the most recently available data on all allogeneic transplants conducted in Australia, Canada, Denmark, France, Germany, the Netherlands, New Zealand, Sweden, the United Kingdom, and the United States. The data on transplants came from the 208 centers that performed them during 1989-91 and covered approximately 10,000 patients. In addition, we convened an advisory panel of clinical experts in the field of bone marrow transplants to establish criteria for what would constitute better quality along both dimensions of interest to the study. Finally, we interviewed heads of transplant units in each of the countries to gain some insight into the environments in which decisions regarding transplantation were made.

Study Results

Our findings on the availability of transplants are displayed in table 1. Two sets of findings are presented. The first column shows the overall rate as computed by dividing the total number of transplants by the number of people in each country in the age group generally eligible for transplantation.[4] The last column of the table shows the likelihood that patients with chronic myeloid leukemia in each country would receive a transplant. Our focus on CML as the "signal" disease for the availability dimension is based on the fact that it is the one relatively common form of leukemia that can be cured only with transplantation (ALL and AML are sometimes cured by

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[3]Allogeneic bone marrow transplants treat disease of the bone marrow by destroying the diseased marrow of the patient and then infusing healthy marrow from a suitable donor. Patient charges for this procedure commonly exceed $125,000. The other major type of bone marrow transplant, which uses marrow drawn from the patient instead of a donor, is called an autologous transplant.

[4]Patients age 55 and older were generally not considered to be suitable candidates for bone marrow transplants because the complications that often accompany the treatment become more severe with age.

chemotherapy). The rates for CML were computed by dividing the number of transplants for CML in each country by the incidence of the disease for that country.

Table 1: Availability of Transplants: Annual Rates of Allogeneic Bone Marrow Transplantation, 1989-91

Country	Per million population (age 0-54)	Per case of CML (age 0-54)
Sweden	9.0	.54
United Kingdom	8.2	.48
New Zealand	7.4	.46
Denmark	7.8	.41
Canada	8.9	.39
Australia	8.8	.38
United States	8.1	.35
Netherlands	6.6	.33
France	13.4	.32
Germany	5.6	.26

As can be seen from the table, the United States, with a rate of 8.1 transplants per million, was near the middle of the 10 countries on the overall availability of transplantation. The same was true for CML, for which the United States was seventh. That is, for a disease in which a bone marrow transplant is the only therapy with curative potential, patients in the United States were less likely to receive a transplant than were patients with that disease in 6 other countries.

Our findings on appropriateness are presented in table 2. The numbers displayed in each column show, for each country, the percentage of patients who received a transplant at a less-than-optimal point in the progress of their leukemia. (For example, the upper lefthand cell shows that 18 percent of the CML patients who received a transplant in the Netherlands would have had a better prognosis had they received their transplants earlier.) The data are presented separately for each disease because the criteria used to define "advanced disease" differ for each leukemia. The last column shows the proportion of transplants in each country (for any of the three diseases) that were performed at a less appropriate stage.

Table 2: Appropriateness of Transplantation: Proportion of Allogeneic Bone Marrow Transplants Performed at Advanced Stage of Disease[a]

Country	CML	ALL	AML	Total
Netherlands	18%	9%	4%	10%
United Kingdom	22	6	1	11
Canada	21	5	2	11
France	35	1	3	12
Sweden	22	8	6	14
Denmark	30	0	0	17
[illegible]	27	19	3	21
Australia	33	21	2	19
United States	30	20	7	19
New Zealand	50	50	0	31

[a]For related-donor transplants performed in 1989-91.

In general, the appropriateness data show that patients in the United States were among those least likely to receive their transplants at the most appropriate point in the progression of their disease. Although this pattern has negative implications for the quality of care for each of the leukemias, this is especially true for CML patients. In the case of CML, because the overall rate of transplantation was not particularly high in the United States, the relatively large percentage of transplants performed on patients with poor prognosis means that relatively fewer patients with good prognosis received transplants in this country than elsewhere.

In addition to patients with advanced disease who might have benefited more from transplantation had they received the treatment earlier, we identified a group of patients who may have received transplants that were not necessary. Specifically, as the time in first remission increases for acute lymphoid leukemia patients who have been treated with chemotherapy, the likelihood that they have been cured by the conventional therapy increases. Therefore, after a certain point, the risks entailed in undergoing bone marrow transplantation will exceed its likely benefits for this group of patients. However, one quarter of the ALL patients in the U.S. who received their transplants in first remission waited more than a year for their transplants. In all likelihood, a bone marrow transplant was not necessary for many of these patients.

Conclusions

Our comparison of cancer survival rates in the United States and Ontario tells a very simple story. Survival for the four types of cancer is very similar in both locations. With different diagnoses or at different time points, one or the other system shows a slight advantage. However, the overall pattern is one of similarity, with minor variations and, where differences do exist, they have ambiguous implications for assessing quality. We conclude, therefore, that whatever the differences in the structure and financing of the U.S. and Canadian health care systems, they do not produce any clear differentiation in patient survival for these four types of cancer.

Our findings on the availability of allogeneic bone marrow transplantation convey a similar message. Of course, they apply specifically to the use of this procedure in the management of three diseases. However, our "bottom line", that the United States is not notably different from numerous other industrialized countries in the provision of this "high-tech" treatment does have a larger implication in that it raises questions about two prevalent views of health care quality in the United States. Both views, that high quality is achieved through an abundance of high-technology medicine or that the overuse of medical technology detracts from quality by exposing patients to unnecessary risks, rest on a common assumption: that the United States relies on the newest and most complex treatments more than do other economically advanced countries. The findings in our study challenge that assumption. The patterns that we observed demonstrate that U.S. patients, for good or ill, have not been the most likely to receive a transplant for any of the clinical conditions examined.

I believe the most important of our findings concern appropriateness, where the data indicate that even those leukemia patients in the United States who gain access to transplants are less likely than patients in many other countries to receive care at the time when they are most likely to benefit from it. Specifically, the relative standing of the United States on the dimension of appropriateness shows that we, to a greater extent than elsewhere, have failed to provide transplants to patients before their disease progressed to a less treatable stage. At the same time, other U.S. patients were exposed to the risks

associated with bone marrow transplantation when the likelihood that their leukemia would relapse was already very low.

The data we have presented today do not allow us to determine which among the proposals developed to date for reform of our health care system is likely to improve the performance of the United States in the area of transplant services. Our data do highlight specific areas where patterns of bone marrow transplantation in the management of the three leukemias could be improved. They also show that, for the diseases and therapy examined, a range of alternative approaches to financing and delivering health care perform as well or better along three dimensions of quality than our existing health care system.

This concludes my remarks. I would be happy to answer any questions that you might have.

Mr. McDERMOTT. Mr. Silberman.

Mr. SILBERMAN. I have no opening statement. Thank you.

Mr. McDERMOTT. Well, thank you for your testimony. I just want to ask a question. I think I understood the last of what you said, but is it fair to say that your results support the argument that single-payer systems can provide the best quality of care and that quality and access does not depend on private funding of the health care system?

Ms. CHELIMSKY. Well, I think you could say from our data that having a single-payer system, at least for bone marrow transplant, does not rule out a strong performance on availability, and access and appropriateness. I would say it does not rule it out.

Mr. McDERMOTT. Yes. I hear the qualifier. You just want to do another study. [Laughter.]

As a physician, I am curious what it is like to practice medicine in these other countries. You actually looked at each case in the case of the bone marrow transplants.

Ms. CHELIMSKY. Yes.

Mr. McDERMOTT. In your contact with physicians, both here and in other countries, did you find much difference in the actual practice of how the decisions were made about bone marrow transplants?

Ms. CHELIMSKY. Well, we asked a number of people, as you said, and particularly people who had practiced both in the United States and abroad, about how decisions are made, particularly with regard to capacity and clinical guidelines and how patients are processed through the decision points that are relevant to them. And I guess what struck us most was that in this country, clinicians and hospitals alone deal with capacity—in other words, the question of whether to build a unit and how big it should be—whereas, in the other countries, other parties are involved. And also, it seems to me that in no other country did we find that physicians were involved on a case-by-case basis with insurers and government people in determining who should receive a transplant. Those were the major differences.

Would you like to add something to that, George?

Mr. SILBERMAN. Yes. I think what struck us most in our travels was that this was the only country where there was involvement from actors outside the clinical environment on a case-by-case daily basis in reaching a decision about who gets transplanted and who does not. There were certainly constraints in all systems, but it was the focus in this country on the individual case that struck us.

Mr. McDERMOTT. Did you from that draw conclusions or have questions raised about how that affected the decisionmaking process?

Ms. CHELIMSKY. We did not do that.

Mr. SILBERMAN. No. I think we had personal impressions about it, but not conclusions. This is information that comes from people who have practiced in both environments. It is not the result of any empirical research on our own part.

Mr. McDERMOTT. Do other countries do better than the United States because they just adopt technologies that we have developed, or are advances in medical care available here more rapidly

than in other countries? Can you see any difference in those kinds of things?

Mr. SILBERMAN. Well, just in allogeneic bone marrow transplantation, there were developments on both sides of the Atlantic. HLA typing—tissue typing—was developed in the Netherlands. The Nobel Prize for bone marrow transplantation was won by Donnall Thomas at Fred Hutchinson. So we see a community development.

Allogeneic bone marrow transplantation is conventional therapy for the three diseases we examined. So we do not have information on the movement of technology. By the time we got there, all countries had this procedure.

Mr. MCDERMOTT. So you are really saying this is not an experimental, not a cutting-edge technology at this point. It is a standard, routine procedure, available——

Ms. CHELIMSKY. Somewhere in between.

Mr. SILBERMAN. It is standard and routine, but allogeneic transplant today is different from allogeneic transplant 2 years ago in terms of a variety of details. I think the clinicians can best speak to that when they are up there. Transplantation is accepted, conventional therapy for these diseases, but there are modifications and improvements being made. It is also very complex, dependent on many different components of care and, dependent on many different departments in the hospital.

Mr. MCDERMOTT. Can I ask both of you to pull your mikes toward you and swallow them as you talk?

Ms. CHELIMSKY. Yes.

Mr. MCDERMOTT. Our antiquated system here does not work very well at a distance.

I have one last question, and that is: Can you describe the differences in administration in cancer treatment centers in the countries you examined compared to the United States in terms of screening patients for insurance or the resources devoted to administration, that kind of thing?

Mr. SILBERMAN. It is not a relevant issue anywhere but in this country. Essentially, in every other country, whether a patient is insured or not is not a consideration that anybody has to be concerned about.

In this country, it is a clear consideration. When patients walk into a hospital as potential candidates for transplantation, insurance status is a relevant consideration. Now, patients without insurance can get transplanted through a variety of mechanisms, but they have to be able to pay for the transplant at the time of the procedure, or the likelihood of transplantation remains small.

Let me just qualify that by saying that this is information that comes from a generalizable sample of transplant directors in this country. This is not information that we have derived based on knowing the insurance status of the transplant patients themselves. But this is what the clinicians out there are telling us is occurring.

Mr. MCDERMOTT. Did you see other differences in the way centers were operating, say in Sweden versus the United States or the United Kingdom versus the United States, beyond the issue of insurance?

Mr. SILBERMAN. There are thousands of differences: whether drug payment is centralized for all departments or whether it goes by department; whether or not nurses are salaried uniformly. Nursing shortage was a big issue in some of the countries. So there are many details, but we have not put those together into some sort of coherent statement about general differences and, more importantly, the impact of those general differences on the quality of care provided to patients.

Mr. MCDERMOTT. As you looked at these systems, did you visit them?

Mr. SILBERMAN. Yes, thankfully, we all visited them.

Mr. MCDERMOTT. Some of you visited some places and others some other places?

Ms. CHELIMSKY. Right.

Mr. SILBERMAN. Yes.

Mr. MCDERMOTT. Did you see differences in the administrative side in terms of how much of the resources went to administration?

Mr. SILBERMAN. No, we did not deal with administration. We just dealt with the clinicians involved in transplantation. We know the research on administration, but I think you know the research as well. So any comments about administration would not be based on our own work.

Mr. MCDERMOTT. OK. Thank you.

Mr. Thomas.

Mr. THOMAS. Thank you.

In a response to the chairman near the end of the comments about the techniques and technologies, that by the time you got out and looked at them there were generally accepted procedures that were used throughout the countries, was there any indication or information of where those techniques were initially developed, or was it a collaborative effort?

Ms. CHELIMSKY. Well, I myself remember, from having lived in France, that there were transplants going on there years and years ago because they had an accident and, you know, it was front-page news for the French. And I am absolutely convinced that that is the reason they do so many, that it is theirs, or they think it is theirs and take credit for it. So there seems to have been an awful lot of cross-fertilization going on with regard to that.

Mr. THOMAS. Ms. Chelimsky, are you saying, then, that the technologies for these bone marrow transplants originated in France? Is that what you are saying?

Ms. CHELIMSKY. No, because it has changed so very much that you could not possibly make that statement. But I do remember——

Mr. THOMAS. But it started somewhere.

Ms. CHELIMSKY. Oh, yes. It started—let's see. It certainly started——

Mr. SILBERMAN. Yes, the acknowledged initiator of this was Donnall Thomas, who is now at Fred Hutchinson and won the Nobel Prize for it I think deservedly so.

Mr. THOMAS. Where was this?

Mr. SILBERMAN. Fred Hutchinson Cancer Center in Seattle.

Mr. THOMAS. Oh, in Seattle, in the United States.

Ms. CHELIMSKY. Yes.

Mr. SILBERMAN. The issue, though——

Mr. THOMAS. I just had to drag that out of you, is all; that although these technologies were developed in the United States, they were adopted by other countries; and so what we are looking at is the result of a cutting-edge technology in this country that other countries utilize.

Mr. SILBERMAN. The problem with that generalization is that HLA typing, which is the way——

Mr. THOMAS. My generalization was a lot more accurate than the record would have been if I had not intervened on the example of France. Yes or no?

Mr. SILBERMAN. No, because——

Mr. THOMAS. My generalization is not as accurate as leaving the statement that France is the area because they got headlines and that seems to be where the technology originated?

Mr. SILBERMAN. Different components of the technology originated in different countries. And without HLA typing, we would not be able to perform allogeneic transplants on any individuals who did not have a related donor. That technology comes from the Netherlands, not from the United States.

Dr. Thomas is credited with starting the procedure. That technology comes from the United States. We do not have information on how much of the changes that have occurred have come from this country or others, but we do know that there are contributions from all sources.

Mr. THOMAS. That would have been a far more acceptable answer than picking out one country and elevating it above all others.

You mentioned the study in the Netherlands in terms of siblings and the transplants, especially on the CML stuff. Was there any study or indication of how that was affected by family size, number of siblings, culture, the way in which families relate to each other, religion?

Mr. SILBERMAN. We know that family size is a determinant of the availability of transplantation, and that is why we included in our report a look at availability based only on transplants for matched sibling donors. That is, if you have a matched sibling donor, what is the likelihood that you would get a transplant? And there, the performance of the United States with respect to availability is essentially the same as it is when you do not control for the availability of donors. I refer you to page 59 of the report for that information.

With respect to family size, unfortunately the data we had were on birth rates, which are a surrogate measure for family size but not exactly the same. And the birth rates for the United States are not exceedingly higher or lower than any of the other countries.

Mr. THOMAS. But ethnicity, religion, and culture would certainly have something to do with whether or not the siblings were, one, willing, two, available—you could track them down. There are a whole number of other factors that would have an impact on that.

We have used the phrase "best quality," and "higher," and I was struck by the fact that higher quality or best was compared quite a bit to frequency of the procedure. The more often it is done in particular countries, there seems to be a relationship between fre-

quency and the definition of best or higher quality. Did I pick that up correctly?

Ms. CHELIMSKY. I think when I spoke about best, I was thinking about appropriateness. The frequency is the availability issue. And my sense was that this is an appropriateness issue with regard to when people are transplanted. I think I was talking about the advanced stages which we feel are—and I think most people would agree—not the right time for a transplant.

Mr. SILBERMAN. I think you have to discriminate between the diseases.

Ms. CHELIMSKY. Right.

Mr. SILBERMAN. For the acute leukemias, we make no statement as to whether the prevalence of the procedure is related to the quality of care. For CML, however, a disease for which allogeneic transplantation afforded the patient the only possibility of cure during this period, we do reach a conclusion that the more likely a patient was to receive a transplant the better the quality. Because without that transplant, the inevitable result was death from the disease.

Mr. THOMAS. But on page 8 and 9 of your testimony, it says, "Although a transplant sometimes offers the only chance of cure for patients with these diseases, it can also lead to serious complications and sometimes to death. Therefore, its use requires a careful weighing of the potential benefit and harm to the patient."

I think there you have got to weigh, obviously, all of the factors, and is it not possible that in weighing all of the factors, the risks, as high as they are, that it might have been a decision of medical professionals not to do it despite the fact that you are qualifying it as best if they do it and not do it. You are doing a count, and in most of your other studies when you proceed by counts, that is somehow a negative. If there are more frequent uses of some options, that is normally not seen as good. It is seen as bad.

I am just wondering if there was any indication that the differences between countries might, in fact, be involved in the decisionmaking of professionals to go ahead or not go ahead. Low or high rates might be reflective of recommendations for patients in a given country rather than specifically dictated by a particular procedure related to the disease. Did you look at that at all?

Mr. SILBERMAN. Yes, I think clinical philosophy is probably a determinant of the frequency of the procedure for these sets of diseases as for any others. However, we have to recognize that for CML, which is really our marker condition, the one on which we are basing most of our conclusions, the alternative to intervention was death for the patient.

Now, the relatively high mortality rate associated with this procedure is less than the mortality rate associated without the procedure, which is 100 percent. So if the question is whether physicians in this country chose death to the patients rather than an aggressive intervention, we did not look at that; but——

Mr. THOMAS. I appreciate the way in which you phrased that.

Mr. SILBERMAN. Excuse me?

Mr. THOMAS. "The doctors chose death of the patient."

Mr. SILBERMAN. No. I am saying if——

Mr. THOMAS. That is what you said.

Mr. SILBERMAN. If you are asking whether physicians in this country adopted that position, we do not have any reason to assume that they would. For CML, for patients who are eligible candidates for transplantation, transplantation is indicated——

Mr. THOMAS. So you are willing to make the flatout statement that there may not be schools of thought between countries or between professionals in countries, based upon other training or their particular backgrounds, about when transplantation is appropriate. You believe that you are able to determine across countries pretty accurately that the timing in one country is entirely appropriate and agreed to by medical authorities in the other country? Or did you compare schools of thought and approaches timewise?

Mr. SILBERMAN. What we based our decisions on was what the clinical research said, and what the clinical research said was this is the only treatment for CML.

Mr. THOMAS. Did you interview professionals in different countries and did they all agree in terms of the timing and the use of transplantation despite the risks?

Mr. SILBERMAN. Yes. There is no variation that during that period of time, transplantation was the only therapy for CML, and there was no variation that the prognosis is much better in chronic phase than in either accelerated phase or blast crisis. That is universally agreed. I mean, you can speak to the clinicians that will be up here shortly with respect to that——

Mr. THOMAS. No, no. I am just trying to find out what the parameters are because I find out most often when we get into these, with broad statements, this will now go out over the news with a very broad statement. Despite the qualifiers, the final quote is the one that will be focused on, that, this is fact and that you cannot qualify it in any way. And I have found out after the fact that if we are going to slay beautiful myths with dirty little facts, we had better have all of the ramifications of just how limited the findings are. That is all I am trying to do. I am trying to understand, to the extent that we can simply walk away with a dirty little fact, without qualifying it, based upon my understanding of exactly what this study was requested to be and what it is. That is all I am trying to determine.

Thank you very much.

Mr. MCDERMOTT. Mrs. Johnson.

Mrs. JOHNSON. Thank you.

I want to just be sure that I understood a couple of the remarks that you made earlier. Did you say that where a sibling donor was available, there was no difference between availability in the United States and other countries?

Mr. SILBERMAN. No. Where a sibling donor was available, there was no difference between the ranking of the United States on that measure and the general ranking; that is, we were seventh on the general ranking and ninth on the ranking of availability when there was a sibling donor available. So our relative position did not change very much.

Mrs. JOHNSON. And so would you translate that into something more easily understood?

Mr. SILBERMAN. My apologies.

Mrs. JOHNSON. Try to say it in a way I might get——

Mr. SILBERMAN. Yes. Essentially, the likelihood of getting a transplant for those people who had sibling donors available was lower in the United States than it was in eight other countries. That is, even after controlling for the availability of a sibling donor.

Mrs. JOHNSON. Now, are there appreciable differences amongst the countries in the requirements for an acceptable donor?

Mr. SILBERMAN. I think that there is variation in terms of clinical philosophy on how many mismatches certain clinicians are willing to do, but those are for mismatched transplants.

Mrs. JOHNSON. Would you enlarge on that? You say there is a difference amongst countries on how many mismatches a physician is willing to do. Does that mean that countries vary in their tolerance for physicians making wrong decisions and a mismatch leading to death? I am not a physician.

Mr. SILBERMAN. I am not a physician either, so I am going to pass——

Mr. MCDERMOTT. If the gentlelady would yield for just a second, let's clarify all our understanding here so that we sort of know kind of what we are talking about on the same basis.

You are saying that if somebody has leukemia, the most likely place to find somebody with compatible marrow——

Mr. SILBERMAN. Suitable donor.

Mr. MCDERMOTT [continuing]. Is a sibling.

Mr. SILBERMAN. Right.

Ms. CHELIMSKY. Right.

Mr. MCDERMOTT. With the techniques developed in Holland, they are able to designate and find out in the more general population somebody who might be an acceptable donor.

Mr. SILBERMAN. Who is not related to the patient.

Mr. MCDERMOTT. Not related. And once you understand that, then you understand that when they start moving away from the family and starting out into the general population, they are taking greater and greater risk. That is basically what you are saying.

Mr. SILBERMAN. That is right. And I think that that question really is best directed at the clinicians who are going to be here because they understand this a lot better than I do.

Mr. MCDERMOTT. Maybe we should have had them first to explain what it is we are talking about. But go ahead.

Mr. SILBERMAN. I am sorry, Mrs. Johnson. I am not sure where we are with respect to the question.

Mrs. JOHNSON. Well, your answer implied that nations had different philosophies as to how much risk was acceptable.

Mr. SILBERMAN. I think the more accurate statement is clinicians have different orientations with respect to how much of a mismatch they think still retains a sufficient prognosis that the procedure should be performed.

Mrs. JOHNSON. Ad would you say that the American physician community is conservative in this regard?

Mr. SILBERMAN. We really do not know with respect to any of the countries how they break out in terms of the number of mismatches they are willing to do. The one piece of information we do have is that the general willingness to transplant patients who do not have a related donor is relatively high in this country compared to others.

Mrs. JOHNSON. The willingness to do that is relatively high?

Mr. SILBERMAN. It is relatively high in this country compared to others.

Mrs. JOHNSON. Are there any specific differences in protocols? We govern transplants through, you know, fairly strict procedures and protocols. I am not sure just what the right names are, but you have to meet a lot of criteria. Are there more criteria to be met to do this kind of procedure in America than to do this kind of procedure in other countries?

Mr. SILBERMAN. There is enormous variation here in terms of conditioning regimens, in terms of the drugs.

Mrs. JOHNSON. There is more—I am missing a couple of your words.

Mr. SILBERMAN. There is considerable variation all over, and we do not have any information about how the transplants were actually performed, which is the question you are really asking.

Mrs. JOHNSON. But, I mean, did you look at the criteria, the protocol? Most sophisticated medical centers, where there is a considerable risk in a procedure, have pretty clear protocols governing those decisions. They are not made loosely.

Mr. SILBERMAN. Are you talking about eligibility for the procedure?

Mrs. JOHNSON. Eligibility. I would assume that in this issue of match where nonfamily donor is a greater risk that family donor that there would be some governance of evaluating that risk.

Our malpractice laws create a different practice environment in America, which makes risk, the risk factor in a decision to transplant a more prominent factor in the decision. So when I am looking at, what I am wondering is: Did you evaluate the criteria? Does America have stricter criteria, probably driven by the different environment of liability that our physicians practice in? Did you get to that level?

Mr. SILBERMAN. We saw very little variation in terms of the clinical criteria presented to us by center directors for chronic myeloid leukemia. There was considerable difference in philosophy with respect to the most appropriate candidates on the acute leukemias. So for example, for acute myeloid leukemia, some centers liked to perform transplants while the patient was in first remission. Some centers waited until the patient was in second remission.

Mrs. JOHNSON. I see. So in other words, while the clinical criteria did not vary, the philosophy of when the transplant was appropriate varied?

Mr. SILBERMAN. When it was most appropriate, right.

Mrs. JOHNSON. In other words, in this issue that my colleague from California pointed to on page 8, where it looks at the complexity of this operation and, therefore, the need to weight its possible curative impact against the complications, life-threatening complications that could develop, our physicians tend to be more conservative than other physicians, would you say?

Mr. SILBERMAN. No. I think I have to bring you back to CML. I was talking about the acute leukemias. With respect to CML, there is little variation in terms of what the most appropriate time is across any of the countries or any of the clinicians. It is during

the time that the patient is in chronic phase. There is no variation with respect to that.

Mrs. JOHNSON. Once you get to chronic phase?

Mr. SILBERMAN. Excuse me?

Mrs. JOHNSON. Once you get to the chronic——

Mr. SILBERMAN. No, no. You present in chronic phase, and then the question is: Does the disease progress to accelerated phase of blast crisis, and ideally——

Mrs. JOHNSON. Now, what is the percentage of cases in which once a patient gets to a chronic phase that this operation cures the patient?

Mr. SILBERMAN. I think I would rather leave that for Dr. Horowitz and Dr. Cheson. They have the data better on the——

Mrs. JOHNSON. But is it in the study? When you talk about survival rates being the same, what are those rates? Are the survival rates on average 1 of 10?

Mr. SILBERMAN. No, they are higher than that for CML.

Mrs. JOHNSON. Roughly how high are they?

Mr. SILBERMAN. Thirty percent survival rates, Dr. Horowitz? In chronic phase.

Mr. MCDERMOTT. Please identify yourself.

Mrs. JOHNSON. I would be happy to defer this, Mr. Chairman, until we get into this next panel. I just think that this is relevant because what we are really getting to here is that behind the statistics that make countries look different from one another may very well lie different judgments as to what is worth doing and the different philosophies. I think that matters, and I think we need to get into that with the next panel because, first of all, those judgments as to what treatment is appropriate are driven both by outcomes and your understanding of what might be the outcome for the patient and what are the tradeoffs for that patient, and also by the liability environment in which you work, where the price is far higher for a misjudgment in America than it is in any other country. So I think we do need to look at all of those things in the next panel, but I appreciate your wanting to defer to them.

Mr. SILBERMAN. Yes. The notion of physicians in this country being more conservative, however, is not supported by our data that show that physicians in this country tend to transplant patients at a point in the progression in the disease when the prognosis is poorer. And that is why the notion of conservatism really does not adhere to our data.

Mrs. JOHNSON. Wait, I did not follow that. Did I understand you to say that the physicians in American tend to transplant later in the process?

Mr. SILBERMAN. Yes.

Mrs. JOHNSON. But, you see, that could very well be because the risk of transplant is considerable and their liability for a misjudgment is considerable, and so they want to wait until there is absolutely no alternative. Because if they take the risk earlier on and the patient dies——

Mr. SILBERMAN. The problem with CML is there is absolutely no alternative at the beginning. There is only one treatment. If the patient does not get transplanted, the patient has no possibility of cure, and not performing the transplant then but, rather, perform-

ing it when the patient has poorer prognosis, first of all, provides the treatment anyway, so any concerns about societal costs are not in issue, and only provides it to the patient when they have less chance of being cured by it. That is where our judgment on the relative inappropriateness of waiting comes from.

Mrs. JOHNSON. Thank you. That is very helpful. I will look forward to the next panel.

Mr. MCDERMOTT. Mr. McCrery.

Mr. MCCRERY. Mr. Chairman, I apologize for coming in late, and I missed the presentation and so I am not sure if we are talking about both the cancer survival study and the bone marrow transplant. Just one thing, and I will let this proceed. I am curious as to why you did not use the same countries in both studies. Why didn't you include all the countries that you included in the bone marrow study and the cancer survival study?

Ms. CHELIMSKY. It is a simple answer: data.

Mr. SILBERMAN. Data.

Ms. CHELIMSKY. Data problems.

Mr. SILBERMAN. For the survival study, we really needed high-quality data, population-based registries that incorporated information on every patient that had cancer. Many of the countries have registries that list cancer patients only upon autopsy reports, and so any country that has a large percentage of that, obviously we cannot measure survival for those. However, after a fairly lengthy process of trying to get as many countries as we could, we wound up with the two in question.

Mr. MCCRERY. And why is the data so much better in the bone marrow transplant?

Mr. SILBERMAN. Excuse me?

Mr. MCCRERY. Why is the data so much better in the bone marrow——

Mr. SILBERMAN. Well, much thanks to Dr. Horowitz here who runs the International Bone Marrow Transplant Registry, which is funded specifically to keep data on bone marrow transplant patients.

Mr. MCCRERY. OK. Thank you, Mr. Chairman. That is all I have.

Mr. MCDERMOTT. I think it is fair to say, isn't it, that you chose this illness to look at because we had the kind of data that is available in bone marrow transplant as opposed to a whole lot of other things.

Mr. SILBERMAN. And it met some of our criteria: first of all, that it was a complex therapy, that it was an expensive therapy, and that it was a therapy that was lifesaving in its potential. So all those combined led us to allogeneic transplantation. Also, that it was conventional treatment. We did not want to really deal with the experimental therapies.

Mr. MCDERMOTT. OK.

Mrs. JOHNSON. Mr. Chairman.

Mr. MCDERMOTT. Mrs. Johnson.

Mrs. JOHNSON. I just want to get on the record at the appropriate point that, on page 23 of your report, you say that 53 percent of those receiving the transplants in the chronic phase were alive 6 years later. So we are talking basically about a 50/50 risk. Most of those who died did so in the 12 months following the proce-

dure, almost all from complications of the treatment, such as infections or graft versus host disease. And it is my understanding also this is quite a painful procedure. Is that not so?

Mr. SILBERMAN. Yes.

Mrs. JOHNSON. So a physician facing this is looking at a 50/50 risk, a very painful procedure, and this is a chronic, very serious disease. So I think it is important to put that judgment, since American physicians are really making that judgment more conservatively, apparently, from your data than are the physicians in other countries. It is important to look at the 50/50. We are not talking 1 out of 10 or 9 out of 10. We are talking 50/50.

Mr. SILBERMAN. 50/50 chance of cure versus 100 percent chance of death without the procedure.

Mrs. JOHNSON. That is right. Thank you.

Mr. MCDERMOTT. Let me just ask one question on the other study. I look at your cancer survival, and I can see a real difference in one line, obviously a line you point out; that is, the breast cancer statistics relevant to Ontario. It says that 45,000 people, more women are alive in the United States because of our treatment.

Isn't that a significant number, and isn't that worth saying there is a difference?

Ms. CHELIMSKY. Well, it certainly is a significant number, and there is a difference. The thing is how you are looking at it. If you are looking at the four curves—I guess that chart is gone now—essentially looking at how different we are from the people in Ontario, Canada, you see that some of the curves are almost superimposed. With regard to the breast cancer line, it is clearly different. There is no crossover, and it also is the case—that there is a consistently higher survival rate for the United States. So the question you ask yourself at that point is: Well, is the quality of care better here, perhaps? Is that the reason for it? And then you would expect, if that were the case, that you would see something like that in the other three curves. So that is a question, and we do not know the answer to that. But we are wondering about it.

The other issue is we do more screening than the Canadians do, and we may be in the presence of something they call lead-time bias, which is a horrendous phrase, but the issue may be that, in fact, we do not see an increase in survival for us but just an artifact, that because we are looking at it earlier, the time to death seems to be longer but it is only because the Canadians are detecting it later.

So the question of whether it is real or not is what is bothering us there. Otherwise, we would cry, "Eureka, we have got something." But it is not clear.

Mr. MCDERMOTT. We want to thank you.

Mr. MCCRERY. Mr. Chairman.

Mr. MCDERMOTT. Yes.

Mr. MCCRERY. Excuse me.

Mr. MCDERMOTT. Surely.

Mr. MCCRERY. If I might just inquire about one other thing. In looking at your chart here, it does appear that survival rates in the United States are higher than Ontario for every procedure up until 36 months or so. Is that correct?

Mr. SILBERMAN. I think the curves first cross at 36 months for lung, yes.

Ms. CHELIMSKY. Yes.

Mr. MCCRERY. So up until 3 years following surgery or treatment, the United States has a higher survival rate than Ontario in every category. And that leads me to question the types of individuals who were the subjects of your study. Were they a homogeneous group in terms of age, sex, race, economic status?

Mr. SILBERMAN. The patients from Ontario included every cancer patient diagnosed in Ontario during 1978 to 1986, and the patients in the United States were from the Surveillance Epidemiology and End Results Program maintained by the National Cancer Institute. It is a registry that covers about 10 percent of the U.S. population. All ethnic groups, all ages, sizes, shapes, colors; it is everybody. And that is one of the problems in interpretations because, you know, it really is the entire population.

Mr. MCCRERY. So the United States population that was the subject of this study was probably more dissimilar than the population study in Ontario.

Mr. SILBERMAN. Yes, I assume that the demographics of the populations in our study mirror the demographics of the populations of that province and this country.

Mr. THOMAS. Would the gentleman yield?

Mr. MCCRERY. Sure.

Mr. THOMAS. How can you make that statement in terms of the U.S. sample? You said it was about 10 percent of U.S. breast cancer patients, during the period from 1978 to 1986?

Mr. SILBERMAN. About 10 percent of all cancer patients diagnosed in the United States for these four forms of disease.

Mr. THOMAS. Where did you get the 10 percent? The number is where?

Mr. SILBERMAN. That is from the population covered by the SEER program.

Mr. THOMAS. And what screening factors would there be in terms of how those people are located?

Mr. SILBERMAN. Every cancer patient in the geographic areas covered by those registries.

Mr. THOMAS. And is the geographic area the United States?

Mr. SILBERMAN. The State of Connecticut, the State of Iowa, five counties around Oakland, Atlanta. These are among the areas that have been selected to try and cover the U.S. population without collecting data on everybody in the country.

Mr. THOMAS. And what is the validity rate?

Mr. SILBERMAN. If you are talking about how representative that sample is of the general population, the information we have is that it is probably not very good with respect to treatment information in SEER, which we did not use. But when you match the estimated mortality from SEER with the actual mortality from the census, they match within about 1 percent. So the assumption is that they do a pretty good job in terms of capturing the disease.

Mr. THOMAS. And the Ontario patient universe was the entire universe of Ontario.

Mr. SILBERMAN. The entire universe, right.

Mr. THOMAS. And was there any level of comfort or discomfort in comparing one province with a representative sampling across the United States? The only reason I say that is that British Columbia and California may have more in common in certain things than Ontario and California, if you are pulling samplings.

Ms. CHELIMSKY. But there are only three registries in Canada.

Mr. THOMAS. I understand the limitation. What I am trying to do is get you to either agree or disagree that, although this is all we had, you would have liked more in terms of drawing what are obviously going to be conclusions that people are going to skip the details and go directly to the lines.

Mr. SILBERMAN. Yes, this is a comparison between the United States—we are fairly sure of the representativeness of the sample there—and Ontario, where we are sure of the representativeness of it. In fact, in the report we go to great lengths to——

Mr. THOMAS. How representative is Ontario of the Canadian population?

Mr. SILBERMAN. No idea.

Mr. MCDERMOTT. One-third of the population.

Mr. SILBERMAN. It is one-third of the population, but it is——

Mr. THOMAS. That is fine. I mean, I can give you one-third of a sampling which is skewed by 40 percent. You know, I am just trying to find out when we draw two lines and we say one is Ontario and the other one is the United States what that means.

Mr. SILBERMAN. We say Ontario pretty clearly throughout the report.

Mr. THOMAS. And Ontario has the generally accepted best medicine in Canada?

Mr. SILBERMAN. No idea.

Mr. THOMAS. You have no idea.

Mr. MCDERMOTT. Mr. Gibbons will inquire.

Mr. MCCRERY. Reclaiming my time, Mr. Chairman—I had yielded to Mr. Thomas.

Mr. MCDERMOTT. OK.

Mr. THOMAS. I thank the gentleman for yielding.

Mr. MCCRERY. And I will conclude quickly. I would just point out the four lines on the chart. The United States has a greater survival rate in lung cancer up until about 3 years, and then it goes to Ontario. With colon cancer, the United States has a higher survival rate up to about 6.5 years, and then it goes over to Ontario. With breast cancer, the United States has a higher survival rate throughout the experience. And then in Hodgkin's disease, the United States has a higher survival rate through about 5.5 years.

Did you offer any rationale for why the United States seems to have a higher survival rate from 3 to 6 years out and then it transposes?

Mr. SILBERMAN. No, we did not. But the data, interestingly, mirror other results that have compared either parts or the entire countries. There is an interesting article by Roos and his colleagues that looked at 12 surgical procedures that show more or less the same thing: an early U.S. advantage and then either equality or crossover. I think that is a fascinating issue to pursue. Why it occurs we do not know.

Mr. McCrery. Mr. Chairman, that is fascinating to me, too, and I recognize that GAO only had the data that was available to examine. But I think it is clear that the data that they had to examine is insufficient in terms of drawing any conclusions with respect to either the quality of care in the two countries or in terms of the similarity of results in like-situated individuals. We have no way of knowing and GAO had no way of sorting out individuals of the same age, economic status, race, and so forth that might have been a better study than the one we were presented with today.

Mr. McCrery. I think one of the things that one can say, though, is that these were requested by Mr. Gradison to determine whether or not there was some clear advantage to one or another system. And it is pretty clear that what you get is no clear advantage and a lot of questions at the end of it.

Mr. Gibbons. Thank you, Mr. Chairman. I apologize to the other members. I am not a member of this subcommittee, and so my questions may seem quite irrelevant. But I have always operated under the theory that the American medical care system, while it was full of inequities as far as availability is concerned, there was no doubt that as far as high technology was concerned, we were the world leader, that no one was anywhere near us. It seems that this study that Mr. Gradison requested has at least let some of the air out of that balloon of mine. Is that right?

Ms. Chelimsky. Well, I think you have to remember that this is a specific study of one procedure.

Mr. Gibbons. I understand.

Ms. Chelimsky. And I would hate to see it generalized to many different things. And so the question, I think, of the quality of U.S. medical care is still intact. But there are not many other studies that have had this kind of data and that have made this kind of effort. We did not find that it looked as good as we expected it to. We were very surprised, and so I hope that more studies like——

Mr. Gibbons. It is surprising to me, and I hope we will do more studies like this. And I realize that you have always got that problem of data. You know, I have tried to find out what my grandparents died of and what my mother and father died of and what my brother died of and all of that, and I realize that, gee, it is terrible just to try to collect simple data like that.

Now, I do not really understand, because I am not a member of this committee, your chart on page 13. Would you kind of go over it with me slowly? This is on the appropriateness of a certain type of bone marrow transplant performed at advanced stages of the disease. This is where the disease is totally fatal. Is that right?

Ms. Chelimsky. No. Only for CML. The one on the left.

Mr. Silberman. What happens with each of these diseases is that they progress, if not treated successfully or if not treated at all.

Mr. Gibbons. Yes.

Mr. Silberman. And so one thing we looked at, across countries, was what percentage of all transplants are performed once the disease has progressed to a stage where it has a poorer prognosis. And as you can see from the chart, the figures there are for each disease, but the total across all the diseases shows that about 19 percent of all the transplants would have offered better prognosis had

they been performed earlier in the progression of the disease, as opposed to 10 percent in Netherlands, 11 percent in Canada, et cetera.

Now, one thing has not come up here that I think is important there might be an explanation for this that the reason why we do such a high percentage in advanced disease is we are willing to offer the therapy at that time and other countries are not. That is, we are really offering hope to patients when other countries are essentially rationing and not providing the therapy.

But if that were the case, then our rates should look higher, and they do not. So even though we provide about the same or somewhat less, we do a higher percentage at a less appropriate time, and that is where our cause for concern comes from.

Mr. GIBBONS. Well, now, go across the top. I understand what you mean by country. What do you mean by CML?

Mr. SILBERMAN. That is chronic myeloid leukemia. It is a form of leukemia that occurs primarily among the elderly.

Mr. GIBBONS. All right. Now, what do you mean by ALL?

Mr. SILBERMAN. That is acute lymphocytic leukemia. AML is acute myeloid leukemia. Those are three different diseases, and for each, the appropriateness of transplant varies as to when is the best time to do it. That is why we tried not to combine them and to keep them separate.

Mr. GIBBONS. Well, in a list of 10 countries you have here, the total rating of the United States looks better than New Zealand, but it does not look much better than the other countries.

Mr. SILBERMAN. Anybody else, that is right.

Ms. CHELIMSKY. That is right.

Mr. GIBBONS. Why?

Mr. SILBERMAN. I wish we knew. I do not think we know why at this point. That is what we are trying to work on as we proceed.

Mr. GIBBONS. It is not a very good mark for our high-tech medicine, is it?

Mr. SILBERMAN. It certainly is not for this procedure.

Ms. CHELIMSKY. I would like to just make one point here. I think for both of our studies, we are talking much more about how things are than why they are. I think we need to go——

Mr. GIBBONS. Oh, I understand that, yes. We have an awful time finding out why. It is easy to—OK. Well, thank you very much.

Mr. THOMAS. Mr. Chairman, just briefly, and it may be more appropriate for the next panel, but in looking at that, I am refreshed by my other chairman's comments, in terms of leukemia and the different types of leukemia. I assume there is some kind of a genetic proclivity to leukemia. That is why you go with siblings. Or is it just body receptivity?

Mr. SILBERMAN. You go with siblings because their tissue matches yours so that you do not get the rejection of the——

Mr. THOMAS. OK. Now, too far off the point, but I am just looking at all of those comparisons. Obviously we are dealing with European and advanced countries where this procedure is a normal one. But the only country that has a significant heterogeneity to it is the United States in comparison percentage-wise with the other countries. Was there any examination of, or do we have any evidence—that is why I said it might be for the other panel, where

there are particular racial or even ethnic proclivities? Did any of that come up? That is, the universe of leukemia patients would be greater in particular countries versus others.

Mr. SILBERMAN. These numbers were computed by taking the number of transplants for CML in the Netherlands, for example, and placing that over the number of cases of CML in the Netherlands. So it is 18 percent——

Mr. THOMAS. But the number of cases would be based upon——

Mr. SILBERMAN. Varies from country to country.

Mr. THOMAS [continuing]. The diagnostic capabilities. But since we have a commonality of technology, that probably would not be it.

Mr. SILBERMAN. Yes, we control for variation in the incidence of disease across country. So some countries might have twice as much as another, but the denominator changes.

Mr. THOMAS. Yes, yes. OK.

Mr. MCDERMOTT. The committee will stand in recess until about 20 minutes after 11 while we go to vote. Thank you very much. I want to thank the panel for coming.

[Recess.]

Mr. CARDIN [presiding]. The subcommittee will be in order. Let me once again, on behalf of the subcommittee, apologize for the interruptions caused by votes on the House floor.

I will now invite Dr. Mary Horowitz, the Scientific Director of the International Bone Marrow Transplant Registry and Associate Professor of Medicine, Medical College of Wisconsin, to come forward. Welcome to the committee. It is a pleasure to have you here. You may proceed as you wish.

Dr. Cheson also would like to come forward. Dr. Cheson is the head of the Medicine Section of the Cancer Therapy Evaluation Program, National Cancer Institute. It is a pleasure to have both of you with us.

Dr. CHESON. But for the record, I need to state that I am here as a member of the Scientific Advisory Panel and not as a representative of the National Cancer Institute.

STATEMENT OF MARY M. HOROWITZ, M.D., SCIENTIFIC DIRECTOR, INTERNATIONAL BONE MARROW TRANSPLANT REGISTRY, AND ASSOCIATE PROFESSOR OF MEDICINE, MEDICAL COLLEGE OF WISCONSIN, MILWAUKEE, WISCONSIN; ACCOMPANIED BY BRUCE CHESON, M.D., HEAD OF MEDICINE SECTION, CANCER THERAPY EVALUATION PROGRAM, NATIONAL CANCER INSTITUTE

Dr. HOROWITZ. Thank you, Mr. Chairman, members of the subcommittee, for the opportunity to be here this morning to discuss a study with which I have had the pleasure to be associated since 1992. Since the inception of this project, I and Dr. Cheson and Dr. Fred Applebaum of the Fred Hutchinson Cancer Research Center in Seattle have served as clinical advisers to the GAO study on allogeneic bone marrow transplantation that was presented earlier this morning. It is in that capacity that we appear before you today.

Since the GAO staff have already described the study in detail, I am going to orient my remarks toward my personal experience

in doing this study with the GAO and relate how its results have changed some of my preconceived notions about the performance of the U.S. health care system in providing high-tech medical care.

First, as is incumbent on any "expert witness," I will take a minute to describe my training and experience in the area of bone marrow transplantation.

My clinical training is in medical oncology. I am an associate professor of medicine at the Medical College of Wisconsin in the Division of Hematology/Oncology and a member of an active bone marrow transplant program that does over 50 allogeneic bone marrow transplants yearly. I also have a Master's degree in biostatistics and clinical epidemiology. It was while I was doing my graduate work that I first became involved in analyzing data collected by the International Bone Marrow Transplant Registry, IBMTR. The IBMTR is is a voluntary research organization that collects data on transplant recipients in over 200 institutions in 40 countries. An allogeneic bone marrow transplant is a transplant that uses bone marrow from a healthy donor, as opposed to an autologous transplant which uses marrow that has been obtained from the patient. The IBMTR collects data on allogeneic bone marrow transplants, which were the subject of this report.

The IBMTR is supported by grants from the National Cancer Institute, the National Institute of Allergy and Infectious Diseases, the National Heart, Lung, and Blood Institute, and several private foundations. It has over the past 20 years maintained and developed an extensive data base of clinical information and now has data for over 20,000 persons who have received allogeneic transplants. It has conducted numerous studies looking at factors that influence the outcome of such transplants. Its scientific activities are guided by an advisory board composed of internationally acclaimed experts in this field.

I began working with the IBMTR in 1986 and became it scientific director in 1991. I am also director of the North American Autologous Bone Marrow Transplant Registry, a similar organization that collects data on recipients of autologous transplants in the United States and Canada. I serve on the Board of Directors of the National Marrow Donor Program, the U.S. registry of volunteer donors, and on the Bone Marrow Transplant Core Committee of the Eastern Cooperative Oncology Group, which conducts clinical trials studying bone marrow transplant strategies.

Through these positions, I come into regular contact with bone marrow transplanters throughout the world and am quite familiar with analyzing transplant data. Relevant to today's conversation, I have reviewed transplant programs in England, Denmark, Germany, and Italy, as well as the United States.

When I was contacted to serve on this advisory board, I agreed largely because the IBMTR data would play a central role. I thought it was a very important use of this database, and I wanted to make sure that all the strengths and limitations of the data were clearly understood. I also thought the goals of the project were very worthwhile and had great respect for the other people who had agreed to serve on the advisory committee.

Aside from providing data that the IBMTR has collected over the past 20 years and helping to collect additional data from non-

IBMTR teams, my input as a member of the advisory committee, similar to that of my colleagues, focused on three central tasks.

First was deciding on an initial study design. In this phase of the study, we had to decide which diseases were appropriate to compare among countries and establish some criteria that we felt would constitute patterns of more versus less appropriate clinical practice. This forced us to identify some parameters of quality that could be measured with hard data. We decided to focus on issues of availability and appropriateness rather than outcomes. We felt that the factors potentially affecting bone marrow transplant outcomes were numerous, complex, and impossible to adequately address within the scope of the study in a way that would allow for valid comparisons among countries.

After some preliminary work, the next phase of work for the advisory panel was to refine the study design based on the initial findings. This helped to ensure that the project was proceeding as planned and, where there were deviations in the original study design were necessary, that we achieved a consensus on the appropriate approach.

Finally, as the study reached its conclusion, we played a role in organizing the findings in an objective, valid, and, we hope, useful manner, making sure that the report accords closely with the data, and that the inferences drawn from the data were clinically sound.

This study is an important use of a comprehensive clinical data base. Its results provide new insight into the performance of the U.S. health care system in the area of high-tech medicine, using bone marrow transplantation as an example. My fellow researchers at the GAO were a pleasure to work with. They quickly grasped the important clinical issues and worked through them carefully. They did not go for simplistic measures or measures that might have had more sensational value but were less scientifically sound. An example was their agreement to focus on the issues of availability rather than survival, which we felt could not be interpreted validly.

My primary reason for appearing before the subcommittee today is that this study conveys very important lessons for the process in which you are currently involved—that is, reforming this country's health care delivery system. As a clinical transplanter and as director of the IBMTR, before the study I really felt that I had a reasonable sense of how often transplants were done, at what stages the procedure was offered to patients, and how the United States compared to other countries in its pattern of use.

I was certainly aware that there are patients in this country for whom there is an economic barrier to transplant. This is something that I do have to deal with. However, I agreed with the conventional wisdom that high-tech medical care, including transplants, and especially matched sibling transplants for chronic myelogenous leukemia, is available to patients in the United States to a greater extent than elsewhere. Further, given our capacity to perform transplants, I assumed that we generally performed them at earlier stages of disease than many other countries. If I had been called to testify before you 2 years ago, I would have gladly shared these opinions with you. As we both now know, these opinions would have been wrong.

There are three lessons to be learned here. First, there is the conclusion of the report. The United States does not surpass all other countries in the use of at least one sophisticated medical treatment: allogeneic bone marrow transplantation. The second is that conventional wisdom is not always so wise, and we should be a bit more humble in translating our impressions into facts. Third, and most important, decisions on health care reform must rely more on objective research than on opinion, even when the opinions come from experts.

Although it may appear self-serving for a researcher to espouse the need for more research, I think that the results of the studies presented today emphasize the need for critical analyses of real clinical data, not only in planning reform—and, of course, it is essential for that—but once reform takes place, in evaluating the effects of the reforms that we make. Because, as imperfect as we are in assessing what is happening under our current system, we are likely to be at least as imperfect in predicting all of the effects of reform once it takes place.

It is in large part due to the foresight of the clinical bone marrow transplanters who established the IBMTR 20 years ago and arranged for collection of the kind of data needed for these studies and the continuing voluntary participation of bone marrow transplanters around the world who contribute data, as well as the continuing support of NIH in maintaining the registry, that this study was possible. Similar types of data bases and similar types of research will be much needed, especially over the next few years as we change our health care system. As intriguing as anecdotes are and as compelling as our personal experience might be, they cannot substitute for comprehensive empirical research.

This concludes my remarks for this morning. Again, I thank you for the opportunity to be here, and I would be very happy to answer any questions that you might have.

Mr. CARDIN. Dr. Cheson, do you wish to add anything to the statement?

Dr. CHESON. No, I have nothing to add to this eloquent presentation except to support Dr. Horowitz's comments about the thoughtfulness and thoroughness of our GAO collaborators.

Mr. CARDIN. Thank you.

First let me compliment you on your testimony, particularly your conclusions that those of us who believe that we are expert on a subject and use our opinions as fact will do good to reflect a little bit before we state our opinions so factually. I very much appreciate that advice. It is good advice for those of us who serve in Congress also. [Laughter.]

And as Dr. McDermott said, we are going to discard your advice immediately.

It is difficult for any health care system to deal with high-tech, high-cost procedures. The United States is not unique in the discovery that what we thought we were doing was not, in fact, the case.

You mentioned economic barriers as a factor in this country. What impact do you believe the economic barriers had in the results that you came up with? And does that impact as to what stage the procedures are available? Does it take a poor person

longer to be able to get the procedure, therefore, at a later stage than someone who has more comprehensive health benefits or a more enlightened insurance company?

Dr. HOROWITZ. I will answer your question in two stages. First of all, we did not collect data in this study regarding the insurance coverage of individual patients. Therefore, the simple answer to your question is I do not know for sure how much of the delay in transplant or limited availability in the United States is caused by the percentage of the population that is either uninsured or underinsured.

The only thing that the study does say is that a variety of health care payment systems provide at least as good and in some instances, better availability to transplant than the United States.

On a personal level, I can only relate anecdotes and discuss the decisions that I am forced to make in evaluating patients for transplant. And I know that one of the questions that must be asked, in addition to the questions about disease and other medical conditions, is: What is your type of insurance? There are delays that occur because patients come in with either no insurance policies or insurance policies that do not cover all aspects of bone marrow transplantation. This is true even for some standard indications for transplant. I can recall individual cases where there have been delays.

I have no data to give you about the total impact of those kinds of problems on delivery of health care as a whole in this country.

Mr. CARDIN. I appreciate that answer. We are wrestling also with a problem on practice guidelines, and I am curious as to whether there is general agreement on bone marrow transplant as to when it is appropriate and when it is not. Or do we have different interpretations and, therefore, different results depending upon the person or the facility in which the patient seeks treatment?

Dr. HOROWITZ. Well, this goes back to our initial role as advisers to the study; to pick diseases where there was general uniformity of opinion among transplanters. And the index disease that gives us the most information about availability and appropriateness is chronic myelogenous leukemia, or CML. For the time period studied, There was general agreement that bone marrow transplant was the standard therapy for persons with CML who had an HLA matched sibling. I think that there was as much uniformity of opinion as you can get about the treatment of a disease existed for the role of HLA matched sibling transplants for CML for the time of this study.

Do you agree with that?

Dr. CHESON. Yes, and another point that I do not think was as clearly enunciated this morning as possible was that as the disease progresses, the likelihood of success of this procedure drops dramatically from perhaps a 50 to 70 percent cure rate when the patient receives this therapy in the chronic early phases of the disease, to one that is significantly less than 10 percent in the latter stages of this disease.

Dr. HOROWITZ. We were fortunate to have a disease like this to be able to study. There are a couple of things about CML that made it good for a study like this. First of all, there is uniformity

of diagnosis. It is not a difficult disease to diagnose, so we did not have to worry about differences in diagnostic capabilities among countries.

There is also uniformity about appropriate treatment. There is much information about the impact of waiting until the disease transformed, and there is uniformity in the recommendation that transplants be performed relatively early in chronic phase. Also, people do not die from CML immediately, so treatment can be delayed if the system does not allow for a transplant early on. This contrasts with acute leukemia where some people will actually die before they get a transplant, and we do not have information on those patients. So CML was a disease that was uniquely suited to examining the issues that were of interest in this study.

Mr. CARDIN. As I understand it, there could be many reasons for a person being delayed in getting the treatment. The patient may not have come forward. The doctor may not have diagnosed it properly. There may be a difference in insurance reimbursement that may have an impact.

Your study did not try to deal with the reasons but just the results.

Dr. HOROWITZ. That is true.

Mr. CARDIN. Mr. Thomas.

Mr. THOMAS. Thank you.

On page 3, Doctor, when you talked about the initial study design, you focused on availability and appropriateness rather than outcomes. There were some statements and I think conclusions made with the previous panel, and I just want to reinforce it. Your comments just concluding helped clarify it for me, but let me ask it in a slightly different way.

On the chronic myeloid leukemia where the transplant is the appropriate one, there was, I think, an impression—and tell me if I am right or wrong—that if you did not do the transplant—well, first of all, the odds on dying for everybody is 100 percent. I think we are looking at the life expectancy based on the transplant. And there was some comment in the testimony of the GAO about the—"radicalness" is not the right word—the problems of the transplant. I would like you to talk about that, and I am trying to think of the exact phraseology they used.

Dr. HOROWITZ. Bone marrow transplant is an aggressive therapy.

Mr. THOMAS. It is a very aggressive therapy. The risks are very high.

Dr. HOROWITZ. It has, certainly, substantial risks associated with it.

Mr. THOMAS. Is it because of the techniques that are necessary, in terms of the surgery, or just because of the general condition of the patient at the time surgery is carried out?

Dr. HOROWITZ. For CML it is inherent to the technique because most CML patients in chronic phase are in good medical condition. However, the procedure uses very high doses of chemotherapy and in many instances radiation, which carries some toxicity. This puts the patient at risk for serious infection for a period of time. There are also certain immune complications that can be fatal.

Mr. THOMAS. So not trying to be sarcastic, but this is one of those situations in which the operation is a success but the patient dies anyway, sometimes, because of the associated condition?

Dr. HOROWITZ. Unfortunately, Mr. Thomas, that is true. There is about a 20 to 30 percent mortality from the procedure itself, and that is something that is carefully explained to patients and taken into consideration.

Mr. THOMAS. But what is the other side of the equation? Because, obviously, you are telling them that this is a very aggressive operation and there is a 20 to 30 percent chance you will die—I think you probably say there is a 70 to 80 percent chance you will live.

Dr. HOROWITZ. No, I say there is a 20 to 30 percent chance that you would die of the procedure.

Mr. THOMAS. OK. What is my alternative? Not to have it.

Dr. HOROWITZ. Right.

Mr. THOMAS. And how long would my life expectancy be from the point of time that I would have had the operation with a 30 percent chance of death?

Dr. HOROWITZ. The alternative is that you can receive conventional therapy, which controls symptoms but does nothing to alter the progression of the disease. And you have a risk of transformation that is between 20 and 25 percent each year, a constant risk. Your risk is 1 in 4 to 1 in 5 that your disease will transform to an aggressive phase and that you will die shortly thereafter.

Mr. THOMAS. Is that cumulative every year or are the odds the same every year?

Dr. HOROWITZ. The odds are the same every year.

Mr. THOMAS. So what are the odds of going to the final stage of the disease, if that is a phrase that is appropriate?

Dr. HOROWITZ. If you have made it through 1 year, then your risk in the second year is 25 percent.

Mr. THOMAS. So it is about the same as having the operation?

Dr. HOROWITZ. Yes, except that the cumulative risk after——

Mr. THOMAS. Sure, you have rolled the dice. You have rolled the dice 5 years rather than the 1.

Dr. HOROWITZ. Right. I should say that the median survival—the median survival, the point at which 50 percent of the people have already died—is somewhere between 3 and 4 years.

Mr. THOMAS. And if you have the operation and you survive the operation, the 30 percent death rate?

Dr. HOROWITZ. Well, actually, median survival is not a meaningful statistic because the current results suggest that survival is better than 50 percent. So you do not get to the median. But at 5 years your chance of being alive and free of your disease is better than 50 percent. You have a 20 to 30 percent chance that you will have died of the procedure. You have about a 20 percent chance that your disease will come back and require further treatment. So survival is about 60 to 70 percent right now.

Mr. THOMAS. The numbers are gruesome regardless, and it is a very difficult decision, I would think.

Dr. HOROWITZ. It is a very difficult problem to be faced with, and one has to sympathize with patients who are faced with it. However, it is also——

Dr. CHESON. But if I might interject, the difference between the administration of standard therapy and having this constant risk rate and the transplant is that the transplant offers the chance for cure of this disease, which is not afforded by any traditional therapy.

Mr. THOMAS. I understand that.

Dr. CHESON. So you have got an initial risk, but then the curve is flat.

Dr. HOROWITZ. And I should say that patients find it a terrible choice, but not a difficult choice.

Mr. THOMAS. Yes. Understand the context in which I ask this question because you are someone who performs, on a team, up to 50 transplants a year. You are in the United States. To what extent do you consider yourself part of the problem of the United States in relation to other countries, or why do you not? And what is that others are doing or not doing that you are or are not doing? Do you understand what I am saying?

Dr. HOROWITZ. Yes. Am I part of the problem as to why people are delayed in getting transplants and why transplants, in my opinion, are not being done in all of the patients who are eligible?

Mr. THOMAS. Yes. Why are your colleagues where they are collectively and why you are not individually? Or if you are—I do not assume that to be the case.

Dr. HOROWITZ. Well, I suppose I am a part of the problem because I do not do transplants for free. I cannot afford the $150,000 per patient. And so I am constrained by finding adequate payment for patients.

There are other issues. There are patients who are referred to transplant centers later than they should be, and I do not know all the reasons for that. I would say that once patients get—well, no, I do not know that. I know that once patients get to the transplant center where I work, if they have CML, a matched sibling donor and adequate insurance, they will receive a transplant as soon as is possible.

Mr. THOMAS. So if people of your talent were government employees being paid $50,000 a year, the United States would look better in terms of those results?

Dr. HOROWITZ. It is a system problem. It is not a person problem.

Mr. THOMAS. Well, but you defined it as the $150,000 that people do not have to pay you for you to perform with the expertise that you do.

Dr. HOROWITZ. No, they do not pay me $150,000.

Mr. THOMAS. I understand. I mean you being the generic institute for the services.

Dr. HOROWITZ. Right.

Mr. THOMAS. But if it was government-owned and all of the physicians and surgeons were paid whatever the appropriate government rating would be for someone in that position—I assume in the military they would be getting, what, do you have any idea? I have no idea.

Dr. HOROWITZ. I do not know.

Mr. THOMAS. Do you think the statistics would change radically or would we have different people doing the operations in this

country? I cannot relate to the others who grew up with that kind of a system.

Dr. HOROWITZ. I think that if there were no economic barriers to transplant, transplants would probably be done more quickly. I do not know that for sure, but that is my impression.

I think that there are a variety of systems that can provide access to transplant. The data in this report came from countries with diverse ways of paying for health care. To me it is impressive is how similar the countries. Despite a variety of ways of paying for health care and financing health care, measures of availability did not have that big a spread.

Mr. THOMAS. I am glad you mentioned that because I did want to ask that question in terms of the heterogeneity of the United States as compared, relatively, to those other countries, and any of the genetic proclivities for the leukemia that we are looking at. Those are all not factors that would——

Dr. HOROWITZ. They are certainly valid considerations and ones that we thought about. There is not much difference among these countries in the incidences of the leukemias we studied. Additionally, we adjust for differences in incidence by only looking at patients who actually get the disease and get treated. There are differences in——

Mr. THOMAS. Who get picked up by the system, and that may be a problem in terms of the different kinds of systems.

Dr. HOROWITZ. That might be a problem, except that these are fatal diseases.

Mr. THOMAS. Eventually.

Dr. HOROWITZ. These diseases tend to get diagnosed, which was one of the things I mentioned earlier as making them well-suited to this study. There are differences in HLA-or tissue types of populations in different countries. However, most of our analyses examined matched sibling transplants. That is not determined by how diverse the population is. That is determined by how many siblings you have; because you inherit tissue type from your parents.

So we do not think that it made a big impact on this study. It is something that we gave a lot of thought to.

Mr. THOMAS. Yes. That would get into, then—but, again, given the kinds of countries and the socioeconomic and ethnic similarity, some religious differences. That may be a question.

Finally let me say that I am very frustrated. I have complained loud and long about our failure to have the kind of data that I feel comfortable with in making the kinds of decisions that we need to make. Do you have any opinion at all about the idea that one of the things that might be intelligent for us to do is to move forward with the generally agreed upon administrative changes for the collection of data on a computerized basis, on a national basis, to begin to get a data bank. If we do nothing, I think we should do that. We should have done it last year so that when we get into the decisionmaking process we have hard data like this, so that we have a clearer understanding of the choices in front of us.

Dr. HOROWITZ. I could not agree more, Mr. Thomas.

Mr. THOMAS. Yes, it is frustrating. Thank you.

Mr. MCDERMOTT [presiding]. I am, unfortunately, going to ask you people to sit still for 10 minutes. It will take me that long to

walk, vote, and come back. We will continue in 10 minutes. Thank you.

[Recess.]

Mr. McDERMOTT. The subcommittee will be back in order.

I want to explore a little bit with you the issue of the process, because you suggested it was a systemic problem in the United States as compared to these other countries. I want to talk a little bit about that or see if I can tease out of you the elements that are the systemic problem here.

If somebody gets a blood disease or they are feeling tired or whatever and they go and see a hematologist someplace and they get diagnosed as having chronic myelogenous leukemia, what happens to them in this country as a general rule? What will the hematologist at Sacred Heart Hospital in Spokane do with that patient?

Dr. HOROWITZ. Once the diagnosis is established? I think I will restrict myself to the time period in this study was done.

Mr. McDERMOTT. Let's take Wisconsin.

Dr. HOROWITZ. OK.

Mr. McDERMOTT. Let's take Fond du Lac, Wisconsin. Somebody gets diagnosed in Fond du Lac.

Dr. HOROWITZ. There are several drugs that can be used. People usually present with a very high white blood cell count and may have symptoms related to that, or symptoms related to an enlarged spleen. They are usually started on some medication that is taken by mouth that brings their white blood cell count down, gets the disease under control, and controls their symptoms. If someone presents with a lot of symptoms, they will get started on treatment.

Ideally, what happens then, if the patient is under the age of 55, or under the age of 60—this is a number that is changing—is they and their siblings will be HLA typed that is, tissue typed, to determine whether they have a matched sibling donor.

Mr. McDERMOTT. In Fond du Lac.

Dr. HOROWITZ. That can be done in Fond du Lac. There are some physicians who will immediately transfer or refer the patient for a consultation with a transplant center, and the transplant center could do that typing. It is a mix. It really depends on how comfortable the hematologist that is seeing the patient feels with interpreting HLA data and how available it is at the blood center with which he or she is working.

The transplant center then evaluates the patient for the appropriateness of a bone marrow transplant based on, not only disease and donor availability, but on the patient's other medical problems, if there are any.

Mr. McDERMOTT. Let me just stop you there. Is there any justifiable reason why the doctor in Fond du Lac, once having done that testing on tissue, would not immediately refer them to the Medical College of Wisconsin?

Dr. HOROWITZ. Certainly one can think of some individual cases where a referral would not be indicated. If the patient has some other very debilitating condition, they probably would not refer them, if it is obvious that the patient could not receive an aggressive treatment like a bone marrow transplant. That is a small mi-

nority of cases, and most physicians, except in the most obvious of these, prefer to defer that decision to the transplant center.

The patient may not want a transplant, although I think that most patients would be agreeable to at least having an opinion rendered by a transplanter.

There may be insurance reasons that the patient would not be referred, although we are discussing CML where we all agree that transplant is standard therapy.

Mr. MCDERMOTT. Yes, I am just talking about CML for the minute because that is the easiest one. It is contained in one box.

Dr. HOROWITZ. Right.

Mr. MCDERMOTT. The others have all other kinds of ramifications.

But the CML patient, there would be no reason a doctor would not say, once he had the data in his or her hand, you have a disease that there is only one treatment for it and it is down in Madison or Milwaukee, and down you go.

Dr. HOROWITZ. Yes. I think that that is fair.

Mr. MCDERMOTT. Do you think that would be true nationwide——

Dr. CHESON. A physician who is up on the current status of the therapy of this disease should offer that as the appropriate option for that particular patient. Now, we always run into patients who will say, "Well, gee, my daughter's graduating from college next year or getting married in a year and I do not want to run the risk of having a 30 percent chance of dying prior to that event," and they put off this therapy. But those are individual cases, as Dr. Horowitz said. But anybody who knows how to treat this disease should know that is the most appropriate option.

Mr. MCDERMOTT. So if you get a case where they have kept it from the point of diagnosis and it is 6 months later and they refer them to you and they are already advanced, do you make any kind of effort at your center to contact the doctor and say, "Why did you wait?"

Dr. HOROWITZ. We usually do ask why they waited, although we do not make judgments. Remember, we are in a competitive environment. If you do that too often, the referrals will start going elsewhere.

Mr. MCDERMOTT. This is exactly my point. It is why I am trying to tease out——

Dr. HOROWITZ. I know that. [Laughter.]

Mr. MCDERMOTT. What keeps you from doing that is that you need the referrals to the center to make it functional, to have enough procedures done there to make it a fiscally responsible place, and you also need it for research purposes and teaching and all the other reasons. So you are not likely to call and say to a doctor——

Dr. HOROWITZ. "You idiot." No.

Well, let me try and put this in a little perspective. First of all, there are——

Mr. MCDERMOTT. Where else could they send them?

Dr. HOROWITZ. What?

Mr. MCDERMOTT. Where else could they send them from Fond du Lac? The Mayo?

Dr. HOROWITZ. To Madison.
Mr. MCDERMOTT. To Madison.
Dr. HOROWITZ. Chicago area.
Mr. MCDERMOTT. OK.
Dr. HOROWITZ. Minneapolis. Not Mayo. Well, yes, Mayo Clinic now.
Mr. MCDERMOTT. OK.
Dr. HOROWITZ. There are certainly other places where patients can go, and, in fact, a certain proportion of patients hospital-shop, going to a number of centers before they decide where they are going to have their transplant performed.
Mr. MCDERMOTT. What would be the shopping procedure?
Dr. HOROWITZ. Well, before we get into that, let me just address this other issue.
First of all, in my personal experience—let me preface with that—there are not very many inappropriate referrals. Most of the patients with CML that I see are being referred early in the course of their disease. For most who were not referred early, the reason is apparent. For example, the patient says, "I was not sure I wanted to do this." Some patients go through a long period of denial.
Sometimes it is clear that there was an insurance problem. Some insurance plans will not even pay for that initial consultation or will not pay for HLA typing. Most of the time when there is a delay, you have a pretty good idea of what the delay is for.
I really cannot think of a case where it was not clear to me why the referring physician waited so long. But, you know, I work in a transplant center that does 50 transplants on adults a year for a variety of diseases. That is a problem with looking at data only from a single center with a relatively small number of patients. I really cannot estimate what the magnitude of that problem is. But I do not as a regular practice call up referring physicians and point out what I may think were their mistakes in delaying referral.
Mr. MCDERMOTT. Is that a practice that might be in action in other countries?
Dr. HOROWITZ. I do not know. I really do not know.
Mr. MCDERMOTT. Nothing from the research project would suggest that?
Dr. HOROWITZ. Not in the part of the project that I was involved in, which is analyses of data. There may be some information on that from the systematic interview process done by the members of the GAO. Those are data that have not yet been formally analyzed.
Mr. MCDERMOTT. We appreciate your coming all the way out here for this, and because you bring up the actual experience on the ground, I think you have some other kind of data besides your international reputation.
The issue of insurance, how long does it take to solve that problem, generally? Can you give an impression? Is it a week for somebody who arrives with no plastic in their hand?
Dr. HOROWITZ. No. I am guessing. Sometimes it seems endless, but it is a time period that is measured in months.
Mr. MCDERMOTT. And what is the statistical window for the disease. When you get somebody in an acute phase or who comes in with chronic myelogenous leukemia before it moves to the more aggressive——

Dr. HOROWITZ. The risk of the disease transforming is about 10 percent in the first year and then 20 percent in the second year, 25 percent every year thereafter. So if you wait a year, you have taken about a 10 percent risk that your disease will have transformed already. If you want 2 years, you know, it is a 20 to 30 percent risk.

Mr. MCDERMOTT. Now, let's ask another question which goes back a little further. That is, do you have any data from other sources about the detection of the disease itself? How long have people had symptoms from it before somebody does a blood test and finds out that their blood is loaded with white blood cells?

Dr. HOROWITZ. Well, of course, we do not—CML is a disease that can be present for a long time with no symptoms. So trying to determine how long the disease was present before diagnosis is very difficult.

It not infrequently is detected when a person has a blood test in preparation for another procedure, a presurgical evaluation for some minor surgery or when they have some bleeding after dental work. The patient has had no symptoms but is found to have CML.

There are some data from the Hiroshima atomic bomb survivors, which show increased incidence of CML. There was a latency period of about 8 years before the disease became clinically evident. But it is probably quite variable, and I cannot give you a really precise answer.

Mr. MCDERMOTT. So that suggests that they might have had it for an extended period of time before they got to the general practitioner.

Dr. HOROWITZ. Right.

Mr. MCDERMOTT. Who may or may not have done the—"I am tired, Doctor." "Well, we ought to do a blood count on you." And then there is another delay going to the specialist while the general practitioner—do you see those kinds of situations where there has been an added delay by the so-called gatekeeper, if you will?

Dr. HOROWITZ. Some, yes. Bruce, do you want to address that?

Dr. CHESON. We see this rather frequently where a patient will present with a cold and be treated with antibiotics for a long time, and the white count is up a little bit. It may take weeks to months before the diagnosis is suspected and then the appropriate tests are done. It is not uncommon.

Mr. MCDERMOTT. One of the things that the committee struggles with is this whole business of clinical laboratories and whether or not a physician's laboratory in his office is sufficiently skilled to pick this up. How difficult is it to make this diagnosis?

Dr. CHESON. To suspect a diagnosis is very easy. All you need is an elevated white blood cell count, which is available in all of these. To confirm the diagnosis, one requires a bone marrow aspiration, which is not a difficult procedure, and doing a chromosome analysis on the bone marrow aspiration, which is readily available anywhere. If not on site, certainly you can send it off and get the results back in generally a few days.

Mr. MCDERMOTT. Could one make the mistake of—I went to medical school, but I have forgotten. Some of these are real, honest-to-God questions. Can you make the mistake between an elevated

white count related to an infection and an elevated count related to a chronic myelogenous leukemia at an early stage?

Dr. CHESON. Absolutely. In the earlier stages, when the cells are primarily mature cells like you would see in your blood or my blood, hopefully. When they are just present in increased numbers, then it can be difficult. But then you frequently see the count staying up after the infection is being treated, and then you might start seeing earlier forms, which can also be seen in a number of infections, severe infections, tuberculosis and what have you.

Yes, but it should not take weeks to months to sort that problem out.

Mr. MCDERMOTT. Should not.

Dr. CHESON. Should not.

Mr. MCDERMOTT. Mr. McCrery will inquire.

Mr. MCCRERY. Thank you, Mr. Chairman. As is often the case, you pursued a line of questioning that I thought was appropriate and important, and I had intended to do it myself. So just to try to put the hat on it, is it safe to say that some of the patients who receive treatment past the prime time for treatment is due to a delay in treatment following diagnosis and some of them are due to a late diagnosis?

Dr. HOROWITZ. The only delay that we can measure is the delay after diagnosis.

Mr. MCCRERY. Right.

Dr. HOROWITZ. And that is what these data focus on, the delay after diagnosis. We have no data to estimate the other.

Mr. MCCRERY. OK. So this data is solely after diagnosis?

Dr. HOROWITZ. After diagnosis.

Mr. MCCRERY. OK. You say you do 50 a year at your clinic. Do you have any data on how many are done in the United States total?

Dr. HOROWITZ. How many are done yearly in the United States?

Mr. MCCRERY. Yes.

Dr. HOROWITZ. About 2,000.

Mr. MCCRERY. 2,000.

Dr. CHESON. CML or all——

Dr. HOROWITZ. Well, no, not for CML. For all indications. Probably more than that right now, more than 2,000.

Mr. MCDERMOTT. To clarify, that is for chronic myelogenous leukemia and the other indications as well?

Dr. HOROWITZ. Yes, allogeneic bone marrow transplants, not autologous bone marrow transplants. There are more autologous transplants being done right now than allogeneic transplants.

Mr. MCCRERY. What is the difference?

Dr. HOROWITZ. An autologous bone marrow transplant uses bone marrow that is obtained from the patient and stored. After the patient is given high-dose therapy and he gets his own bone marrow back.

An allogeneic transplant uses bone marrow from a healthy donor.

Mr. MCCRERY. What makes one available for treatment in the first instance?

Dr. HOROWITZ. The diseases that we are talking about today, the leukemias, are diseases of the bone marrow. So, in general, if you

harvest the marrow, it is going to have the disease in it. So when you give it back, the patient will get the disease back.

Mr. McCRERY. So for these diseases that we have on the chart here, they generally would not be treated with the person's own bone marrow?

Dr. HOROWITZ. At the time of the study, that is true. There are some recent developments in using autologous transplants for the acute leukemias.

Bruce, you can address that. You have been involved in that.

Dr. CHESON. There are a number of actually randomized trials which have compared results with allogeneic versus autologous bone marrow transplantation in patients who have achieved their first remission, who are free of disease, and at that point in time either got someone else's bone marrow or their own relatively clean bone marrow to support them after the high-dose therapy, and the results are actually fairly comparable, perhaps favoring a higher toxicity with the allogeneic transplant but a higher rate of recurrence when the patient uses their own bone marrow. So it ends up being sort of a wash.

Mr. McCRERY. And we do not have any data today on comparing the autologous treatment?

Dr. HOROWITZ. Among countries?

Mr. McCRERY. Among countries.

Dr. HOROWITZ. No. The IBMTR has been collecting data for 20 years. NCI funded the North American Autologous Transplant Registry in 1990 and we began collecting data shortly thereafter. So we have data on autologous transplants in the United States and Canada that go back only to 1990. We are just beginning to analyze those data now, but not in terms of availability.

Dr. CHESON. But I must interject that it is a critically important resource that needs to be maintained so that we can address the questions you are getting at.

Mr. McCRERY. Yes, I would think so.

With respect to only the diseases that are on this chart, how many operations are done in the United States?

Dr. HOROWITZ. These diseases account for about 80 percent of the allogeneic transplants, so 1,500 to 1,600 a year.

Mr. McCRERY. 1,500 to 1,600 a year. As a percent of the population, how does that compare with other countries?

Dr. HOROWITZ. This study shows, for the time period studied, it is not as good as other countries.

Dr. CHESON. He will show you the chart.

Dr. HOROWITZ. This relates to the population that would be considered eligible—that is, those under age 55—and it is about 1 in 3 of the patients with CML in the United States versus 1 in 2 for Sweden and the United Kingdom.

The per million population is the number of transplants per million of all people in that age group in the country. So that is standardizing by the population size.

Mr. McCRERY. And so one looking at the two sets of figures would conclude that the incidence of this is higher in the United States than it is in most other countries?

Dr. HOROWITZ. No.

Mr. McCRERY. No?

Dr. HOROWITZ. The incidence is similar. It is the use of transplants that is different.

Mr. MCCRERY. Well, let me ask you to explain that, then, based on your figures. For the United States, you have 8.1 per million population, and then for——

Dr. HOROWITZ. That is for any condition.

Mr. MCCRERY. What?

Dr. HOROWITZ. That is for any condition.

Mr. MCCRERY. Or any what——

Dr. HOROWITZ. An allogeneic transplant for any condition, not just CML.

Mr. MCDERMOTT. Not just for chronic myelogenous leukemia or acute leukemias.

Dr. HOROWITZ. But I think that——

Mr. MCCRERY. So you do not have apples and apples here.

Dr. HOROWITZ. Not on that.

Mr. MCCRERY. Why don't you have apples and apples? Can I see an apples-and-apples chart?

See, what I am getting at is: On this chart, those figures would lead one to believe that the incidence in the United States is higher. But you are telling me that it is two different things that are being compared here. I do not know why that is. Why don't you have——

Dr. HOROWITZ. Why do you think that the incidence would be higher?

Mr. MCCRERY. Well, I mean, if they were apples and apples, you can see in the United States you have 8.1 per million, in the United Kingdom you have 8.2 per million, approximately the same. But yet, in the United Kingdom, you have 0.48 per case, you know, and then in the United States, it is considerably lower than that. That does not gibe. You would think that the incidence would be higher.

Dr. HOROWITZ. Yes, it would be nice to have it per million population with CML.

Mr. MCCRERY. But what you are telling me, throwing this chart away, is that the rate of incidence in the United States based on some other knowledge that you have is about the same.

Dr. HOROWITZ. The incidence varies a little bit from country to country, which is why we really did the analysis focusing on data similar to what is in the right-hand column of that chart, where we focused on people who had the diagnosis. We did not want to confound the analysis with differences in incidence, differences in diagnosis, et cetera. We wanted to know, once people knew they had CML, what was the chance—or AML or ALL—what was the chance that they would get a transplant. And so I think that the data that are most useful for the comparison are those that are on the right-hand side which have as the denominator those patients with the disease.

Mr. MCCRERY. OK, because the rate of incidence for CML is approximately the same in the United States and these other countries.

Dr. HOROWITZ. Yes.

Mr. MCCRERY. OK. You have age 0 to 54. Why is that?

Dr. HOROWITZ. Because fewer than 5 percent of transplants are done in patients over the age of 55. In older patients, the toxicity

of the procedure becomes prohibitive. The toxicity of this procedure increases with increasing age. It is also more likely that older patients have significant coexisting diseases. So most transplant centers have an upper age limit of about 55.

Dr. CHESON. Now, this has been increasing since this therapy first became used. It used to say that you did not get this if you were over the age of 40, and then it went up to 45, 50, 55, and now some centers will do it up to the age of 60 as the technology has been improved.

Mr. MCCRERY. So that cutoff is a decision that is made by the individual clinics?

Dr. HOROWITZ. Right.

Mr. MCCRERY. Is that true in other countries?

Dr. HOROWITZ. Yes, that is true in other countries. It is a decision that is made by the transplanters.

Mr. MCCRERY. In Canada, that is a decision that is made by the transplanters?

Dr. HOROWITZ. That is right.

Mr. MCDERMOTT. If the gentleman would yield, is that uniform across the world? I mean, are basically the Swedes making essentially the same decision as the Dutch, as the French, as the Americans?

Dr. HOROWITZ. We have not looked at that in a systematic manner, but there is variation from program to program on what the upper age limit is. In fact, from program to program in the United States, there is variability in what the upper age limit is. So from hospital to hospital, from transplant program to transplant program, the age varies between, I would say, 45 and 60 now.

Mr. MCCRERY. So in the United States, if a person required or wanted this after age 54, he could shop around and find a clinic that might give it to him. What about Canada? Is that possible for a person to shop around and find a clinic that would give it to him outside of his province?

Dr. HOROWITZ. The Canadian system does allow you to go to more than one center. I think I would have to defer to the GAO, who has done a more systematic review of the differences in protocol among the centers.

Mr. SILBERMAN. During the period——

Mr. MCDERMOTT. If you would identify yourself for the transcriber?

Mr. SILBERMAN. George Silberman. During the period that we studied, about 1.7 percent of all the transplants that were done in the United States were done for patients 55 and older, and between 0.5 and 0.7 percent in other countries. So a little bit higher here——

Mr. MCCRERY. A little bit higher? That is about 3 times as high.

Mr. SILBERMAN. Yes, but in terms of the general population, the impact on the——

Mr. MCCRERY. Well, if you want to talk about impact on general population, you are only talking about 1,600 operations out of 250 million people. So let's not quibble. It is 3 times the rate, 3 times as many people in the United States over the age of 54 get this operation than in other countries.

Mr. SILBERMAN. That is right. If you take 1.7 percent of 1,700, that gives you an idea of how many actual patients——

Mr. MCCRERY. Well, if you take 1,700 out of 250 million, that gives you an idea of what the impact of this whole discussion is on the medical system.

That is the answer to my question. Thank you.

Mr. MCDERMOTT. Can I ask another couple questions here? One is the question of, from your experience at your center in Wisconsin last year, do you know cases that were not done because of insurance? Do you have any record of that?

Dr. HOROWITZ. I know of several cases of patients who were considered candidates for autologous transplants that were not done because of insurance. I know of one case of an allogeneic transplant that was delayed more than 6 months awaiting insurance coverage.

Mr. MCDERMOTT. One case?

Dr. HOROWITZ. One case. Now, these are cases that I personally know about.

Mr. MCDERMOTT. Yes. That is what I am asking about. OK.

Dr. HOROWITZ. And I know of several others that have been delayed 2 to 3 months.

Mr. MCDERMOTT. All right. Further questions?

[No response.]

Mr. MCDERMOTT. We want to thank you very much for coming. This is helpful. I think you can see by our questions that we are in need of data. I think all the responsible health care reform plans have in them big efforts to begin gathering data, because an awful lot of what we are doing here is flying by the impressions that we or experts have, and I think it is the single biggest problem in doing health care reform in this country—the lack of any kind of data on which to base an awful lot of what we decide to do.

Dr. HOROWITZ. Let me just add that it is not data that is needed. Once you have data, one has to fund and allow for research using those data. Hopefully these data collection systems will be designed with the important questions in mind so that when they are all collected, the issues can be addressed by people with appropriate training.

Mr. MCDERMOTT. I hear your request for more research money. [Laughter.]

I think Mr. McCrery hears it, too.

Thank you all very much. The committee is adjourned.

[Whereupon, at 12:35 p.m., the hearing was adjourned.]

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